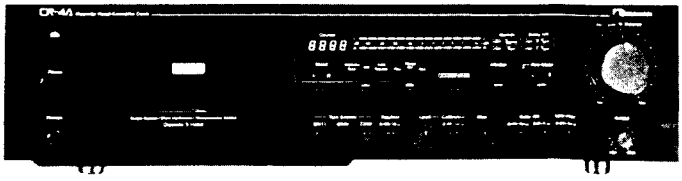
Nakamichi

Service Manual

Nakamichi

CR-4
CR-4A
CR-4E
CR-40

Discrete Head Cassette Deck



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1. GENERAL

1.1. Modification History

According to change of playback/rec. equalization, Main P.C.B. Ass'y and Cal. Osc. P.C.B. Ass'y have been changed as follows:

Serial No.	Part No.	Description
A13102451 - (CR-4A) A13153801 - (CR-4/4E/40)	BA07188A BA07192A	Main P.C.B. Ass'y Cal. Osc. P.C.B. Ass'y
A13101001 - 02450 (CR-4A) A13150001 - 53800 (CR-4/4E/40)	BA07030A BA07008A	Main P.C.B. Ass'y Cal. Osc. P.C.B. Ass'y

1.2. Voltage Selector

Voltage selector is installed on the rear panel for Other version of the Nakamichi CR-4.
This voltage selector can select 110, 127, 220, or 240 V at customer's disposal.

1.3. Package Ass'y and Accessory Ass'y

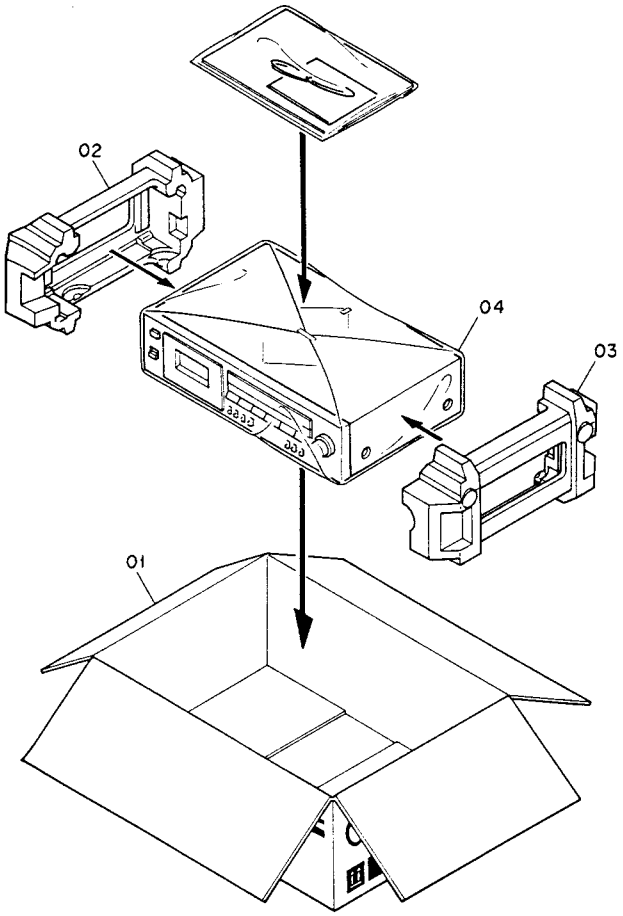


Fig. 1

Schematic Ref. No.	Part No.	Description	Q'ty
		Package Ass'y	
01	0F04083A	Carton Box (CR-4)	1
	0F04085A	Carton Box (CR-4A)	1
	0F04084A	Carton Box (CR-4E)	1
	0F04102A	Carton Box (CR-40)	1
02	0F04087D	Packing L	1
03	0F04088D	Packing R	1
04	0F04107A	Soft-Sheet	1
	0F04093A	Poly-Bag (CR-4A)	1
—	0M05075A	Serial Number Label (CR-4, CR-4E & CR-40)	2
—	0M05074A	Serial Number Label (CR-4A)	2
—	0M03457A	Voltage Label 240V (CR-4 (Australia) & CR-4E (UK))	2
—	0M05101A	Voltage Label 127V (CR-4 (Saudi Arabia))	2
—	0M05102A	Shipping Label LOS (CR-4A)	1
—	0M05103A	Shipping Label VAN (CR-4A)	1
—	0M05084A	Point of Sale Label (CR-40)	1
—	0D04046A	Warranty Card (CR-40)	1
—	0D04047A	User's Pack (CR-40)	1
—	0M05105A	LA Label (CR-4A)	2
—	0M05108A	UL/Canada Label (CR-4A)	2
—	0M05106A	UL Label (CR-4A)	2
—	0M05107A	Canada Label (CR-4A)	2
		Accessory Ass'y	
	0D03092B	Poly-Bag	1
	0D04494A	Pin -Cord (OFC) (CR-40)	2
	0D04766A	General Catalogue (CR-4A)	1
	0D04783C	Owner's Manual (English/German/ French) (CR-4, CR-4A & CR-4E)	1
	0D04784B	Owner's Manual (Japanese) (CR-40)	1
	DA04121A	Pin Cord Ass'y (CR-4, CR-4A & CR-4E)	1
	0D04796A	Tape Catalogue (CR-4A)	1
	0D04797A	Warranty Card (CR-4A)	1
	0D04810A	Important Notice	1
	0M03844B	Power Cord Label (CR-4E (UK))	1
	0D04787B	Price Card (CR-40)	1
	0D04795A	Tape Catalogue (CR-40)	1
	0D04829A	Tape Supplement	1
	0D04848A	Supplement (CR-4 (Other & Saudi Arabia))	1

2. REMOVAL PROCEDURES

2.1. Top Cover Ass'y and Bottom Cover Ass'y
Refer to Fig. 2.1.
(1) Loosen F01 and remove F02 (Top Cover Ass'y).
(2) Loosen F03 and remove F04 (Bottom Cover Ass'y).

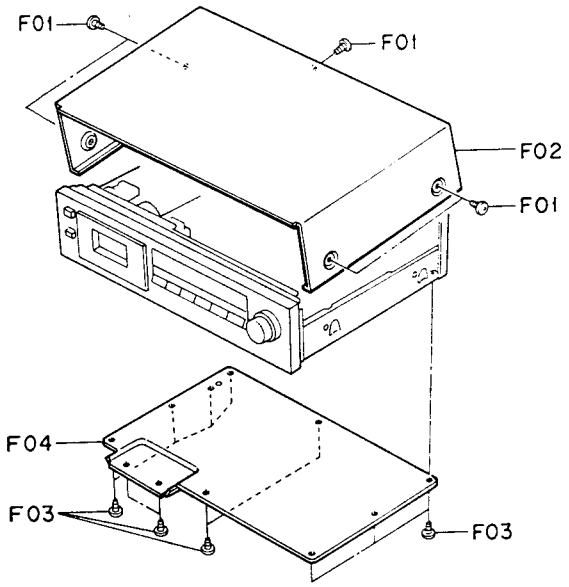


Fig. 2.1

2.2. Cassette Case Cover Ass'y
Refer to Fig. 2.2.
(1) Press F01 (Eject Button) to open F02 (Cassette Case Cover Ass'y).
(2) Pull F02 (Cassette Case Cover Ass'y) upward.

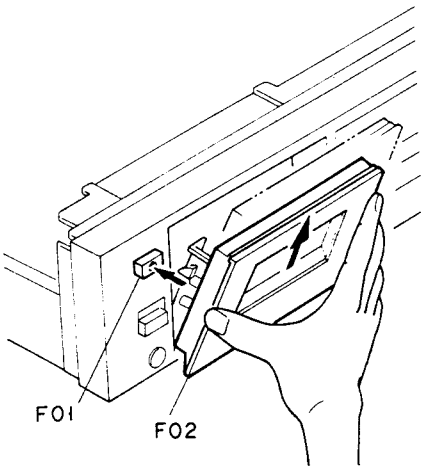


Fig. 2.2

2.3. Mechanism Ass'y
Refer to Fig. 2.3.
(1) Remove the Top Cover Ass'y and the Bottom Cover Ass'y referring to item 2.1.
(2) Remove the Cassette Case Cover Ass'y referring to item 2.2.
(3) Loosen F01, cut F02 with nippers, remove F03 and F04, and disassemble F05 (Mechanism Ass'y).

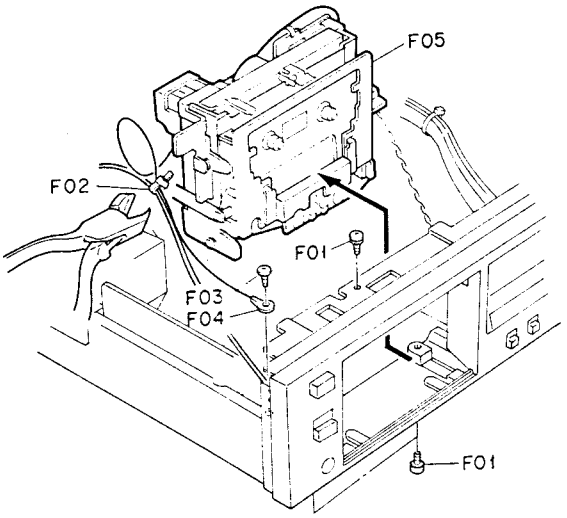


Fig. 2.3

2.4. Monitor Switch Joint
Refer to Fig. 2.4.
(1) Remove the Top Cover Ass'y and the Bottom Cover Ass'y referring to item 2.1.
(2) With pushing F01 (Monitor Switch Joint) in the direction of the arrow A, pull F01 (Monitor Switch Joint) in the direction of the arrow B to remov it.

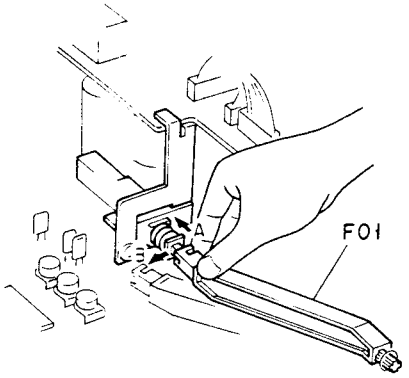


Fig. 2.4

2.5. Front Panel
Refer to Fig. 2.5.
(1) Remove the Top Cover Ass'y and the Bottom Cover Ass'y referring to item 2.1.
(2) Remove the Cassette Case Cover Ass'y referring to item 2.2.
(3) Pull out F01, F02 and F03, and loosen F04 and F05.
(4) With pushing claws by hand as shown in the figure, remove F06 (Front Panel).

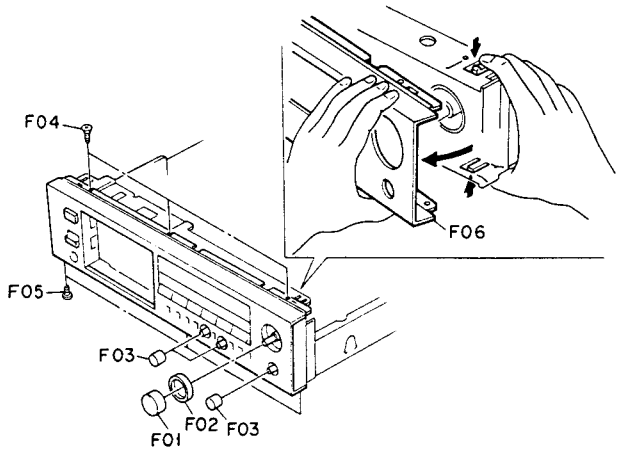


Fig. 2.5

2.6. Bias P.C.B. Ass'y and Level Adjustment P.C.B. Ass'y

(1) Move of Main P.C.B. Ass'y and Cal. Osc. P.C.B. Ass'y

Refer to Fig. 2.6.1.

(a) Remove the Top Cover Ass'y and the Bottom Cover Ass'y referring to item 2.1.
(b) Remove the Cassette Case Cover Ass'y referring to item 2.2.
(c) Remove the Monitor Switch Joint referring to item 2.4.
(d) Remove the Front Panel Ass'y referring to item 2.5.
(e) Loosen F01 and F02, and separate F03 (Rear Panel).
(f) Loosen F04 and F05, and move F06 (Cal. Osc. P.C.B. Ass'y) and F07 (Main P.C.B. Ass'y) rearward.

(2) Removal of Bias P.C.B. Ass'y and Level Adjustment P.C.B. Ass'y

Refer to Fig. 2.6.2.

(a) Move F06 (Cal. Osc. P.C.B. Ass'y) and F07 (Main P.C.B. Ass'y) as described above.
(b) Loosen F08 with a special nut driver or with pliers, and remove F09 and F10 (Bias P.C.B. Ass'y).
(c) Loosen F11 with a special nut driver or with pliers, and remove F12 and F13 (Level Adjustment P.C.B. Ass'y).

Note: When installing the Main P.C.B. Ass'y, to facilitate installation, place the Main P.C.B. Ass'y so that the top of switches on the Main P.C.B. Ass'y come in contact with the ends of push buttons as shown in Fig. 2.7. Then fasten F01 to position the Main P.C.B. Ass'y.

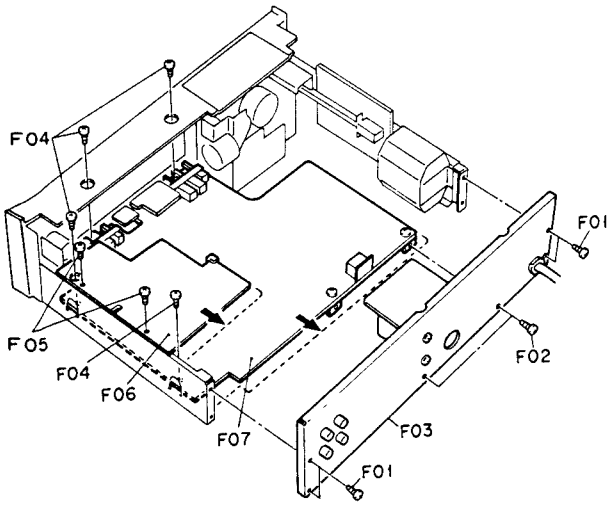


Fig. 2.6.1

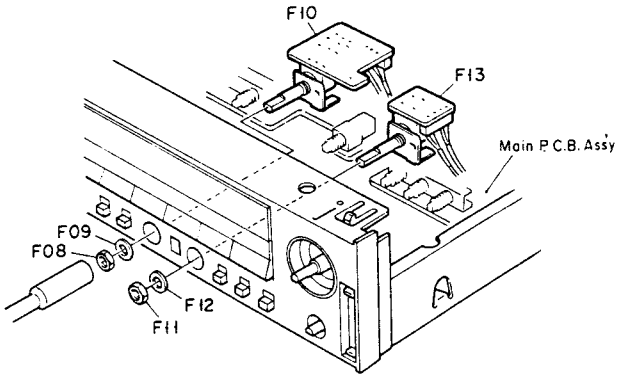


Fig. 2.6.2

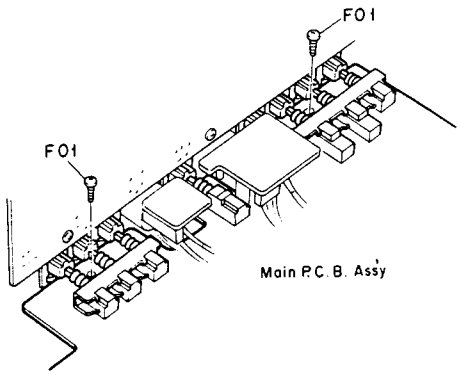


Fig. 2.7

2.7. Control P.C.B. Ass'y

Refer to Fig. 2.8.

(1) Remove the Bias P.C.B. Ass'y referring to item 2.6.
(2) Remove the Mechanism Ass'y referring to item 2.3.
(3) Loosen F01, unhook F02, and remove F03 (Control P.C.B. Ass'y).

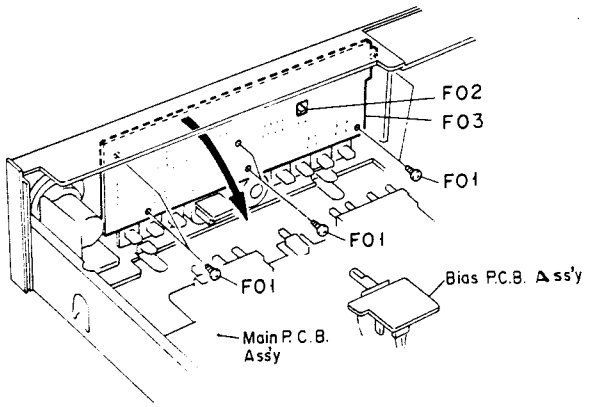


Fig. 2.8

2.8. Head Mount Base Ass'y

Refer to Fig. 2.9.

(1) Remove the Top Cover Ass'y and the Bottom Cover Ass'y referring to item 2.1.
(2) Remove the Mechanism Ass'y referring to item 2.3.
(3) Loosen F01 and remove F02 (Head Mounting Cover).
(4) Loosen F03, remove F04 and F05, straighten F06 (Wire Clamper), and lift F07 (Head Mount Base Ass'y).

Note: When mounting the Head Mount Base Ass'y, follow the next steps. Refer to Figs. 2.10.1 and 2.10.2.
(a) Insert the Plate Washer into the groove of the shaft by hand as shown in Fig. 2.10.1.
(b) Mount F07 (Head Mount Base Ass'y) and fasten F03. Then push the Plate Washer with a blade of screwdriver to set the Plate Washer free. Refer to Fig. 2.10.2.

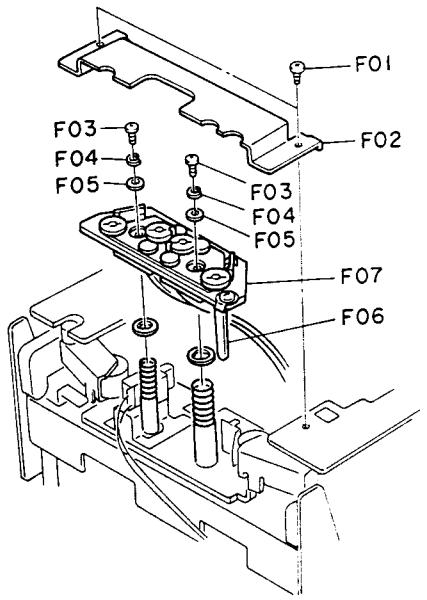


Fig. 2.9

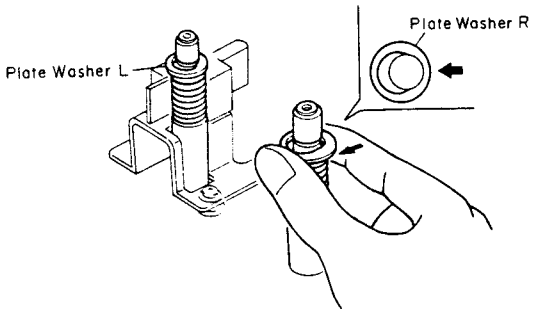


Fig. 2.10.1

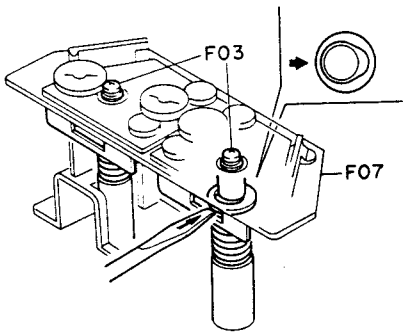


Fig. 2.10.2

2.9. Power Switch Joint

Refer to Fig. 2.11.

(1) Remove the Top Cover Ass'y referring to item 2.1.
(2) Pull F01 (Power Switch Joint) upward to remove it.

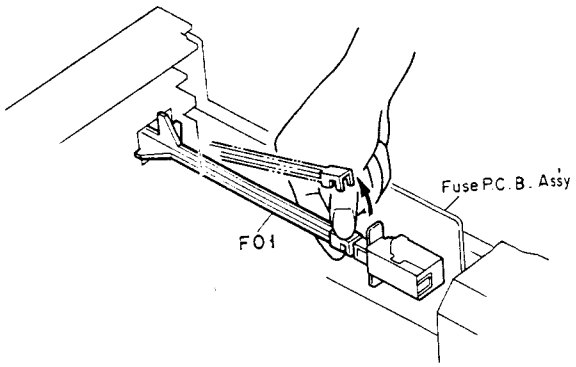


Fig. 2.11

3. TEST TAPES AND GAUGES

(1) 400 Hz Level Tape (DA09005B)
(2) 1 kHz Track Alignment B Tape (DA09087B)
(3) 10 kHz PB Frequency Response Tape (DA09003B)
(4) 15 kHz PB Frequency Response Tape (DA09002B)
(5) 20 kHz PB Frequency Response Tape (DA09001B)
(6) 15 kHz Azimuth Tape (DA09004B)
(7) 3 kHz Speed and Wow/Flutter Tape (DA09006C)
(8) Tape Travelling Cassette (DA09071A)
(9) Reference EXII Tape (DA09111A)
(10) Reference SX Tape (DA09110A)
(11) Reference ZX Tape (DA09109A)
(12) EH Tilt Check Gauge S (DA09088A)
(13) Stroke Check Gauge S (DA09090A)
(14) Tape Guide Height Check Gauge S (DA09091A)
(15) Tilt Check Gauge S (DA09039B)
(16) Torque Gauge FWD (DA09082A)

4. MECHANICAL ADJUSTMENTS

4.1. Record Head and Playback Head Tilt Adjustment

Remove the Cover Plate Ass'y by loosening two screws to gain access to the head block.

Refer to Fig. 4.1.

(1) Remove the pad lifter from the playback head.
(2) Load a Tilt Check Gauge S (DA09039B) in the cassette deck.
(3) Clip the grounding terminal of the Tilt Check Gauge with one end of the cord with clip, and the chassis of the cassette deck with the other end.
(4) Remove both of the Height Gears.
(5) Set the cassette deck in Play mode. Check to insure whether the Beacons Playback Head "Upper" or "Lower" and Record Head "Upper" or "Lower" are illuminating. In order not to give damages onto the head surfaces, push both of slide knobs of the Gauge to away from the heads, then return them to the original place to be in contact with record head and playback head surfaces after Play mode is securely locked.
(6) Beacon Playback Head "Lower" will light on when height adjustment screw (PH) turned counterclockwise but playback Head "Upper" when clockwise. Adjust so that both "Upper" and "Lower" will light on even when you move the slide knob away from the heads and then return it to the original place.
(7) Same procedures will apply to the Beacons Record Head "Upper" and "Lower", except for the height adjustment screw (RH).
(8) Set the cassette deck in Stop mode and fit both of the serrated Height Gears. Then set the cassette deck again in Play mode and insure all of the 4 Beacons are illuminating. If not, (4) through (7) will have to be repeated till satisfactory results are obtained.
(9) Mount the pad lifter on the playback head.

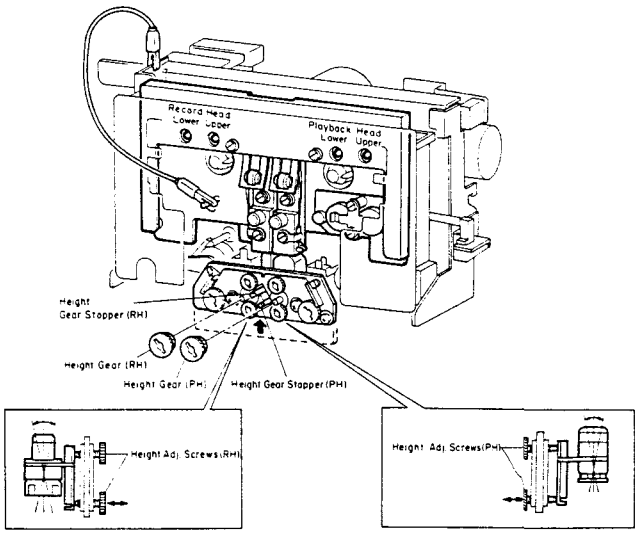


Fig. 4.1

4.2. Head Base Stroke Check

Remove the Cover Plate Ass'y.

Refer to Fig. 4.2.

Note: Before you conduct this adjustment, adjust with a "Tilt Check Gauge S" to insure freedom from tilt on the playback head and record head.

(1) Load a Stroke Check Gauge S (DA09090A) in the cassette deck.
(2) Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the cassette deck in Play mode.
Then slowly release the Indicators and insure whether each of the Indicators is in contact with record and playback heads.
(3) Check to insure whether the line "P" on the Playback Head Indicator meets the central line on the Indicator Plate.
(4) Check to insure whether the line "P" on the Playback Head Indicator locates between the 2 lines on the Record Head Indicator, thus check can be made on record head stroke.

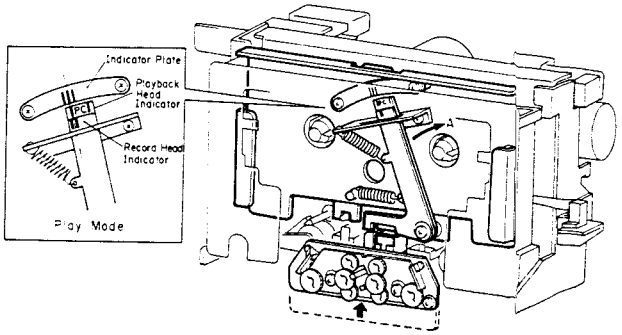


Fig. 4.2

4.3. Erase Head Stroke Adjustment and Tape Guide Height Check

Remove the Cover Plate Ass'y and the Head Mount Base Ass'y.

Refer to Fig. 4.3.

(1) Erase Head Stroke Adjustment

(a) Load a Tape Guide Height Check Gauge S (DA09091A) in the cassette deck.
(b) Set the cassette deck in Play mode, thus check can be made on erase head stroke through the EH Stroke Indicator.
(c) Check to insure whether the erase head surface is aligned with red line on the EH Stroke Indicator. If not, adjust the erase head stroke by loosening screw A that assembles erase head with erase head plate.
(d) After completion of adjustment, screw A shall be locked with lock tight paint.

(2) Supply Tape Guide Height Adjustment

(a) Load a Tape Guide Height Check Gauge S (DA09091A) in the cassette deck.
(b) Set the cassette deck in Play mode.
(c) Slide the Supply Tape Guide Check Bar down against the supply tape guide, and check to insure that the Supply Tape Guide Check Bar is accepted by the supply tape guide. If not, adjust the supply tape guide height by turning screw B.

(3) Take-up Tape Guide Height Check

(a) Load a Tape Guide Height Check Gauge S (DA09091A) in the cassette deck.
(b) Set the cassette deck in Play mode.
(c) Slide the Take-up Tape Guide Check Bar down against the take-up tape guide, and check to insure that the Take-up Tape Guide Check Bar is accepted by the take-up tape guide.

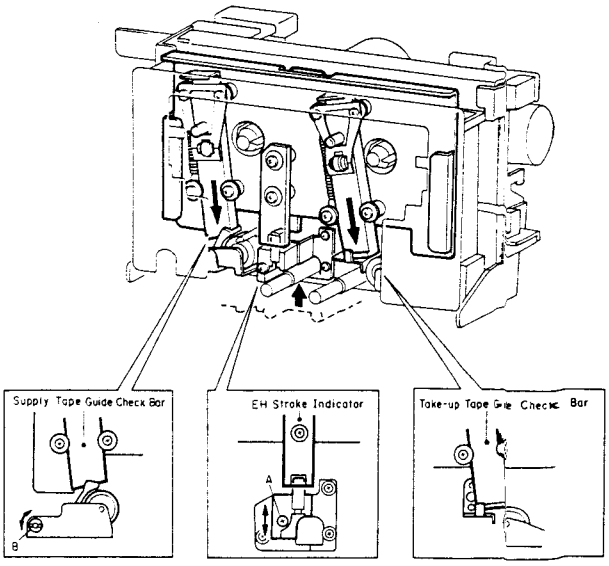


Fig. 4.3

4.4. Erase Head Height and Tilt Adjustment

Refer to Fig. 4.4.

(1) Remove the Cassette Case Cover Ass'y, Cover Plate Ass'y, and Head Mount Base Ass'y.
(2) Load an EH Tilt Check Gauge S (DA09088A) in the cassette deck.
(3) Set the cassette deck in Stop mode.
(4) Check to insure whether one of the 3 Beacons is illuminating. Look down the mirror and slowly turn the Screw "Height" counterclockwise (or clockwise) so that the two horizontal lines on the mirror will become superposed on the line (in different color) of the erase head, and check to insure whether the first Beacon is illuminating.
(5) Turn Screw "Tilt" counterclockwise (or clockwise) to light on the second Beacon. Excessive turning will cause the first Beacon to light off. Adjustments of Screw "Tilt" will therefore be conducted till both of the first and the second Beacons illuminate.
(6) Turn Screw "Azimuth" counterclockwise (or clockwise) to light on the third Beacon. Excessive turning will cause either the first or the second Beacon to light off, and therefore adjust Screw "Azimuth" until all of the 3 Beacons illuminate.
(7) Check to insure whether the horizontal line on the mirror corresponds to that on the erase head. If not, (4) through (7) will have to be repeated till satisfactory results are obtained.
(8) After completion of adjustment, 3 pcs. of screws shall be locked with lock tight paint.

Note: Before use of this gauge, check to insure freedom from dust or dirts, or overflow in the groove of the erase head surface.

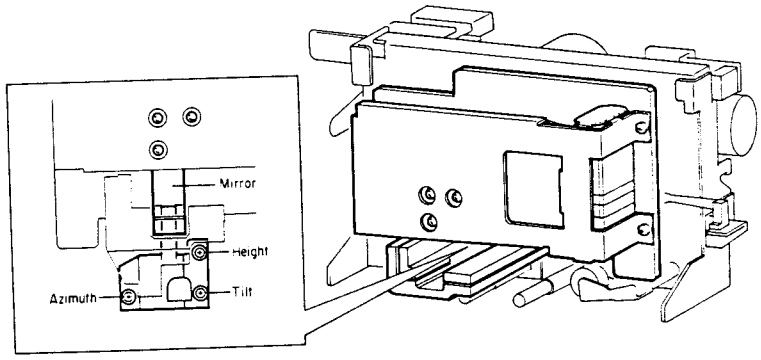


Fig. 4.4

4.5. Playback Head and Record Head Height Adjustment and Azimuth Alignment

Refer to Fig. 4.5.

(1) **Playback Head Height Adjustment and Azimuth Alignment**
(a) Set the Monitor switch to Tape and connect an AC voltmeter to the Output Jacks.
(b) Load a 1 kHz Track Alignment B Tape (DA09087B) and set the cassette deck in Play mode.
(c) Turn the PH Height Gear until the outputs of both channels become minimum.
(d) Load a 15 kHz Azimuth Tape (DA09004B) and set the cassette deck in Play mode.
(e) Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.
(f) Repeat above steps (b) through (e) two or three times to obtain optimum performance.

(2) **Record Head Height Adjustment and Azimuth Alignment**
(a) Set the cassette deck in Stop mode.
(b) Set the Monitor switch to Tape, Eq. switch to 70 μs and Tape Selector switch to ZX.
(c) Load a reference ZX tape and connect an AC voltmeter to Output Jacks.
(d) Feed in 400 Hz (0 dB) to the Input Jacks.
(e) Set the cassette deck in Record and Play mode and turn the RH Height Gear until the outputs of both channels become maximum.
(f) Feed in 15 kHz (—20 dB) to the Input Jacks and turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.
(g) Repeat (d) to (f) two or three times to obtain optimum performance.

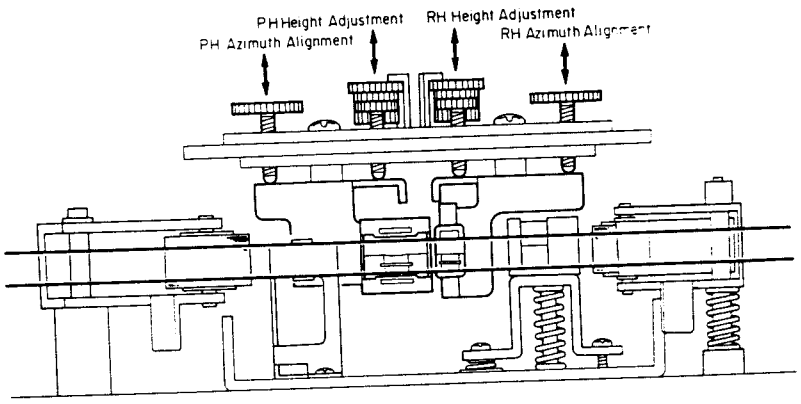


Fig. 4.5

4.6. Tape Travelling Check

Load and play back a Tape Travelling Cassette and check the following:

(1) Tape is in contact with heads sufficiently.
(2) Tape waving is small on the heads and pressure rollers.
(3) Tape is free from waving or slippage from the tape guides.

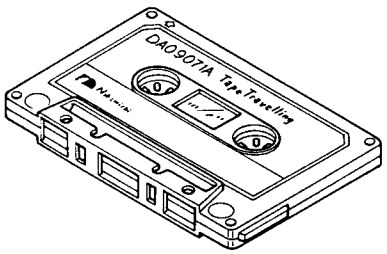


Fig. 4.6

4.7. Eject Damper Adjustment

Refer to Fig. 4.7. Load a cassette tape, and with opening the Cassette Case by pressing the Eject button and closing it by hand, adjust the speed of damper action by the Adjustment Screw.

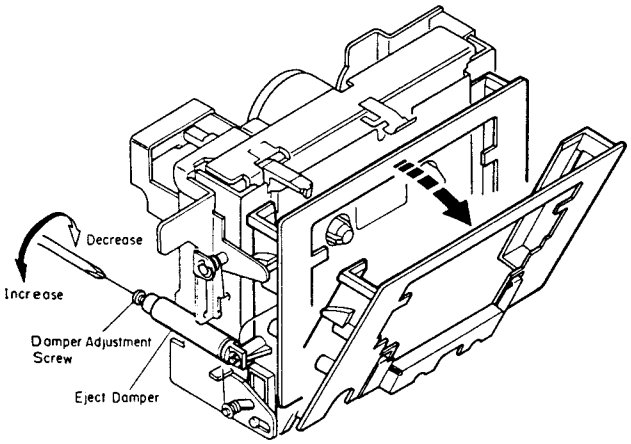


Fig. 4 7

4.8. Reel Motor Speed Adjustment in Play Mode

(1) To warm-up the cassette deck, load a C-60 cassette tape and set the cassette deck in Play mode.
(2) After more than four minutes, load a Torque Gauge FWD (DA09082A) and set the cassette deck in Play mode.
(3) Adjust VR601 on the Main P.C.B. Ass'y to obtain exactly 50 g-cm on the torque gauge.

4.9. Tape Speed Adjustment

Refer to Fig. 4.8.

(1) Connect a frequency counter to the Output Jacks.
(2) Load a 3 kHz Speed and Wow/Flutter Tape (DA09006C) and play it back.
(3) Adjust the Tape Speed Adjustment Volume incorporated in the Capstan Motor to obtain 3,000 Hz on the frequency counter.
    CCW: Motor drives slowly.
    CW: Motor drives fast.

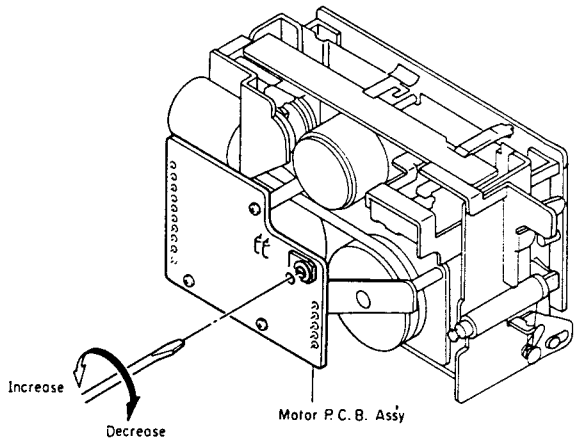


Fig. 4.8

4.10. Lubrication

The tape transport is of a lubrication-free type mechanism. When the following parts are replaced, apply the specified lubricant.

(1) Molykote (R) Grease (X5-6020)
    Cam Motor Pulley
    Thrust portion on the Capstan Shaft
(2) FLOIL GB-TS-1
    Washer between Reel Hub Ass'y and Back Tension Spring
(3) Diamond Oil (EP-56)
    Reel Hub Shaft
(4) Anderol 456
    Capstan Shaft

Note: We suggest that you use the above specified lubricant or equivalent type.
    The company dealing in the above lubricant is as follows:
    (a) Molykote (R) Grease (X5-6020)
        Dowcorning Co., Ltd., 1-15-1 Nishishinbashi, Minato-ku, Tokyo, Japan
    (b) FLOIL GB-TS-1
        Kanto Chemicals Co., Ltd., 2-7 Kanda Sakuma-cho, Chiyoda-ku, Tokyo, Japan
    (c) Diamond Oil (EP-56)
        Mitsubishi Oil Co., Ltd., 1-2-4 Toranomon, Minato-ku, Tokyo, Japan
    (d) Anderol 456
        Toyo Kokusai Oil Co., Ltd., 3-3-5 Hatchobori, Chuo-ku, Tokyo, Japan

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

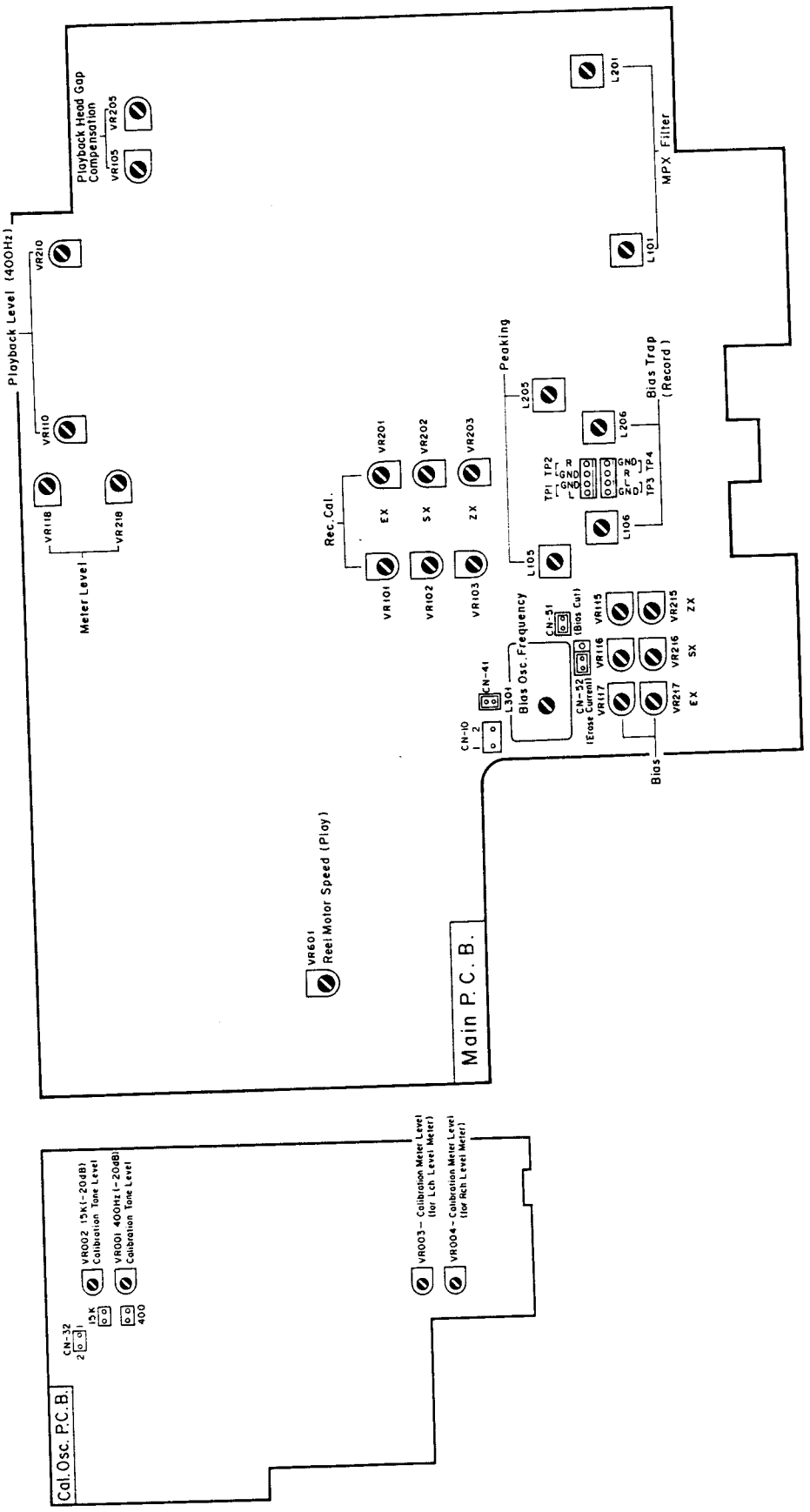
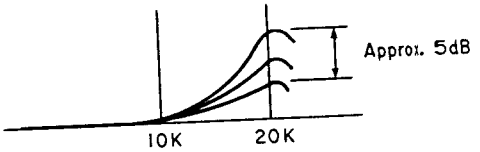
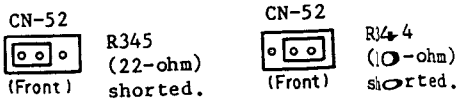


Fig. 5

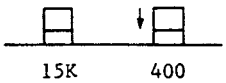
6. ELECTRICAL ADJUSTMENTS

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
1	Preliminary Step			**Output Level - Max.** Balance - Center **Bias Cal. - Center** **Level Cal. - Center** **Calibration - OFF** Monitor - Tape Eq. - 70 μs Tape - ZX MPX Filter - OFF Dolby NR - OFF		Set the CR-4/4A/4E/40 as shown in MODE.
2	Reel Motor Speed Adjustment (Play)	Torque Guage FWD (DA09082A)		Playback	Main VR601	Adjust VR601 to obtain 50 g-cm on the Torque Gauge. Refer to item 4.8.
3	Tape speed Adjustment	3 kHz Speed and Wow/ Flutter Tape (DA09006C)	Frequency Counter to Output Jacks	Playback Monitor - Tape Eq. - 120 μs	Tape Speed Adj. Volume (Capstan Motor)	Adjust the volume incorporated in the Capstan Motor Ass'y to obtain 3 kHz ± 15 Hz on the frequency counter. Refer to item 4.9.
4	Meter Level Calibration	400 Hz to Input Jacks	AC Volt-meter to Output Jacks	Monitor - Source	Main P.C.B. VR118 VR218	1. Feed in 400 Hz and adjust the Input Level control to obtain 500 mV -2 dB on the AC voltmeter. 2. Adjust VR118 (VR218) so that the 0 dB segment on the level meter starts illuminating.
5	MPX Filter Adjustment	19 kHz ±100 Hz to Input Jacks	AC Volt-meter to Output Jacks	Monitor - Source MPX - OFF/ON	Main P.C.B. L101 L201	1. Adjust the Input Level control to obtain 500 mV (0 dB) on the AC voltmeter. 2. Set the MPX Filter switch to ON and adjust L101 (L201) to obtain minimum reading on the AC voltmeter. (The minimum reading will be less than -30 dB.)
6	Playback Head Track Alignment	1 kHz Track Alignment Tape (DA09087A)	AC Volt-meter to Output Jacks	Playback Monitor - Type Eq. - 70 μs Dolby NR - OFF	PH Height Gear	Adjust the PH Height Gear to obtain the minimum readings on the AC voltmeter for both channels. Refer to "Playback Head Height Adjustment" in item 4.5.
7	Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004B)	AC Volt-meter to Output Jacks	Same as above	Playback Head Azimuth Alignment Screw	Adjust the Playback Head Azimuth Alignment Screw to obtain maximum readings on the AC voltmeter for both channels. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 4.5. Note: Repeat Steps 6 and 7 two or three times to obtain optimun performance.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
8	Playback Level Calibration	400Hz Level Tape (DA09005B)	AC Voltmeter to Output Jacks	Playback Monitor - Tape Eq. - 70 μs Dolby NR - OFF	Main P.C.B. VR110 VR210	Adjust VR110 (VR210) to obtain 500 mV on the AC voltmeter.
9	Playback Head Gap Compensation	400Hz Level Tape (DA09005B) 10 kHz PB Frequency Response Tape (DA09003B) 15 kHz PB Frequency Response Tape (DA09002B) 20 kHz PB Frequency Response Tape (DA09001B)	AC Voltmeter to Output Jacks	Same as above	Main P.C.B. VR105 VR205	1. Load a 400 Hz level tape, play it back, and read the playback level on the AC voltmeter. 2. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and adjust the playback head azimuth to obtain maximum levels on the AC voltmeter with each tape. Check that the playback levels are as follows with respect to the level for 400 Hz level tape. 10 kHz: -20 dB -2 dB to +2 dB 15 kHz: -20 dB -2 dB to +3 dB 20 kHz: -20 dB -2 dB to +4 dB If the levels are out of the ranges, play back the 20 kHz PB frequency response tape and adjust VR105 (VR205) to obtain -20 dB +1.0 dB. VR105 (VR205) compensates the playback frequency response at 20 kHz as shown below:  3. Conduct Step 7 "Playback Head Azimuth Alignment".
10	Bias Oscillation Frequency and Erase Current Adjustment	None	AC Voltmeter across the additional 0.1 ohm resistor and Frequency Counter between terminals 1 and 2 of CN-10 on Main P.C.B.	Record, Playback Monitor - Source Tape - ZX Eq. - 70 μs Dolby NR - OFF	Main P.C.B. L301 R344 R345	1. Connect an additional 0.1 ohm resistor in seies to the Erase Head and connect the AC voltmeter across the resistor. 2. Record and playback a reference ZX tape. 3. Adjust L301 to obtain 105 kHz on the frequency counter. 4. Check the erase current by the AC voltmeter. Erase current will be within the range of 310 mA to 400 mA (typically approx. 350 mA). If erase current is less than 310 mA, plug the 2P-receptacle into CN-52 as shown below to short-circuit either R344 or R345.  5. After completion of the erase current adjustment, re-check the bias oscillation frequency. 6. Remove the additional 0.1 ohm resistor.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
11	Record Amplifier Equalizer Adjustment	23 kHz (-20 dB) to Input Jacks	AC Voltmeter across both pins of TP3 (TP4) on Main P.C.B.	Record, Playback Monitor - Source Tape - ZX Eq. - 70 μs Dolby NR - OFF	Main P.C.B. L105 L205	1. Remove the 2P-receptacle from CN-51 to stop the bias oscillation. 2. Adjust L105 (L205) to obtain approx. 16 dB at 23 kHz on the AC voltmeter. 3. Plug the 2P-receptacle into CN-51.
12	Bias Trap Adjustment (Record Amp.)	Remove input signals	AC Voltmeter across both pins of TP1 (TP2) on Main P.C.B.	Same as above	Main P.C.B. L106 L206	Adjust L106 (L206) to obtain minimum reading on the AC voltmeter.
13	Record Head Height Adjustment	400 Hz (0 dB) to Input Jacks	AC Voltmeter to Output Jacks	Record, Playback Monitor - Tape Tape - ZX Eq. - 70 μs Dolby NR - OFF	RH Height Gear	1. Load a reference ZX tape, and record and play it back. 2. Adjust the RH Height Gear to obtain maximum readings for both channels on the AC voltmeter. Refer to "Record Head Height Adjustment and Azimuth Alignment" in item 4.5.
14	Record Head Azimuth Alignment	15 kHz (-20 dB) to Input Jacks	AC Voltmeter to Output Jacks	Same as above	Record Head Azimuth Alignment Screw	Adjust the Record Head Azimuth Alignment Screw to obtain maximum readings for both channels on the AC voltmeter. Refer to "Record Head Height Adjustment and Azimuth Alignment in item 4.5. Note: Repeat Steps 13 and 14 two or three times to obtain optimum performance.
15	Record Level Calibration and Recording Bias Current Adjustment	400 Hz (0 dB), 15 kHz (-20 dB) and 10 kHz/ 20 kHz (-20 dB) to Input Jacks	AC Voltmeter to Output Jacks	Record, Playback Monitor - Source/ Tape Tape - ZX/SX/EX Eq. - 70 μs (ZX/SX) 120 μs (EX) Dolby NR - OFF/B/C	Main P.C.B. (Level) ZX:VR103 VR203 SX:VR102 VR202 EX:VR101 VR201 (Bias) ZX:VR115 VR215 SX:VR116 VR216 EX:VR117 VR217	Adjustment should be made in the order of ZX, SX and EX. 1. Set the Monitor switch to Source. 2. Feed in 400 Hz, and set the Input Level control to obtain 0 dB (500 mV) on the AC voltmeter. 3. Set the Monitor switch to tape. 4. Load a reference ZX tape, reference SX tape and reference EXII tape. 5. Set Record Cal. VR103 (VR203) for ZX, VR102 (VR202) for SX and VR101 (VR201) for EXII tape to their center position. 6. Adjust Bias VR115 (VR215) for ZX, VR116 (VR216) for SX and VR117 (VR217) for EXII tape to obtain maximum reading on the AC voltmeter. 7. Feed in 15 kHz (-20 dB) and adjust Bias VR115 (VR215), VR116 (VR216) and VR117 (VR217) to obtain the same readings as source monitor levels on the AC voltmeter. (to be continued)

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
						8. Feed in 400 Hz (0 dB) and adjust Record Cal. VR103 (VR203), VR102 (VR202) and VR101 (VR201) to obtain 0 dB (500 mV) on the AC voltmeter. 9. Repeat above 7 and 8 two or three times to obtain optimum performance. 10. Feed in 10 kHz and 20 kHz (-20 dB), record and play them back, and check whether the playback levels are within the following ranges. With Dolby NR OFF: -20 dB ±3 dB Level difference between Dolby NR OFF and B: ±2 dB Level difference between Dolby NR OFF and C: ±3 dB 11. Check that the total harmonic distortion is less than 0.8% for ZX tape and 1.0% for SX and EXII tapes. If satisfactory results are not obtained, re-adjust VR105 (VR205) referring to Step 9 "Playback Head Gap Compensation" and repeat above steps.
16	Overall Frequency Response Adjustment	400 Hz (0 dB) and 20 Hz to 20 kHz (-20 dB) to Input Jacks	AC Volt-meter to Output Jacks	Record, Playback Monitor - Source/ Tape Tape - ZX/SX/EX Eq. - 70 µs (ZX/SX) 120 µs (EX) Dolby NR - OFF	Main P.C.B. L105 L205	1. Set the Monitor switch to Source. 2. Feed in 400 Hz and adjust the Input Level control to obtain -20 dB on the AC voltmeter. 3. Set the Monitor switch to Tape. 4. Feed in 20 Hz to 20 kHz (-20 dB) and check to insure whether the output levels are within -20 dB ±3 dB. 5. If above is not sufficient, adjust L105 (L205) to obtain approx. -20 dB at 20 kHz. 6. Conduct step 15 "Record Level Calibration and Recording Bias Current Adjustment". 7. If above is not sufficient, precise re-adjustment of step 9 "Playback Head Gap Compensation", replacement of Playback Head or Record Head, check on item 4.6 "Tape Travelling Check" will be required.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUST-MENT	REMARKS
17	Calibration Tone Level and Meter Level Adjustment	400 Hz (0 dB)	AC Volt-meter to Output Jacks	Record, Playback Monitor - Tape Tape - ZX Eq. - 70 μs Dolby NR - OFF Calibration - OFF/ON Timer - OFF Memory Stop/ Auto Repeat - Memory Stop	Cal. Osc. P.C.B. VR001 (400Hz) VR002 (15kHz) VR003 (Lch) VR004 (Rch)	1. Make sure that the Bias Calibration and Level Calibration controls are at thier center positions. 2. Set the Timer switch to OFF and the Memory Stop/Auto Repeat switch to Memory Stop. 3. Press the Reset button to clear the tape counter. 4. Feed in 400 Hz, record and play it back, and adjust the Input Level control to obtain 500 mV (0 dB) on the AC voltmeter. 5. Set the Calibration switch to ON and pull out the connector CN-32 on the Cal. Osc. P.C.B. Ass'y to cut mute output signals. 6. Remove the 2P-receptacle from the connector "15K (15 KHz)" on the Cal. Osc. P.C.B. Ass'y. 7. Adjust VR001 to obtain 400 Hz -20 dB (50 mV) on the AC voltmeter. 8. Remove the 2P-receptacle from the connector "400 (400 Hz)" and plug the 2P-receptacle into the connector "15K (15 kHz)" on the Cal. Osc. P.C.B. Ass'y. 9. Adjust VR002 to obtain 15 kHz -20 dB (50 mV) on the AC voltmeter. 10. Plug the 2P-receptacle into the connector "400 (400 Hz)".  11. Plug the CN-32 into the original place. 12. Load a reference ZX tape, and record and play it back. 13. Adjust VR003 so that the 0 dB segment of the Lch level meter comes ON. 14. Adjust VR004 so that the 0 dB segment of the Rch level meter comes ON. 15. Turn OFF the Calibration switch and check that the tape is automatically rewound and stops at the tape counter "0000".

7. MECHANISM ASS'Y AND PARTS LIST

7.1. Synthesis

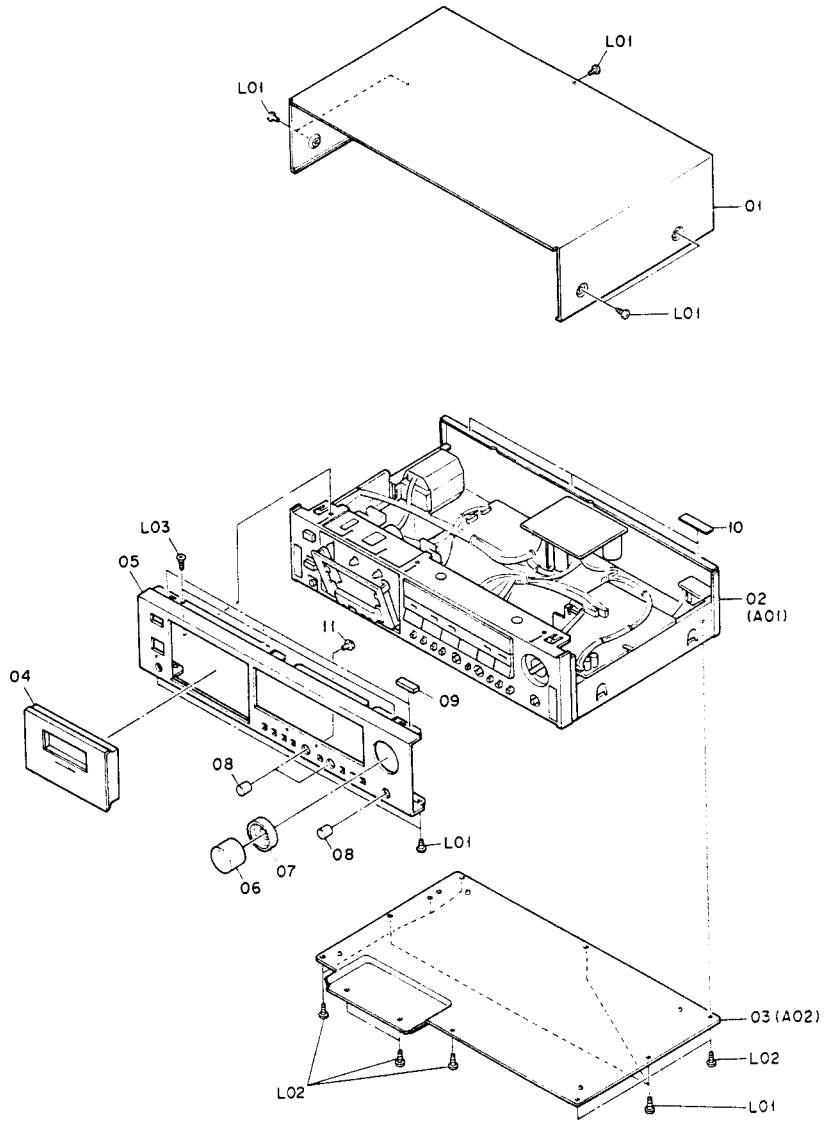


Fig. 7.1

Schematic Ref. No.	Part No.	Description	Q'ty
7.1. Synthesis			
		Synthesis Serial No.: A13101001 -	
01	0H05111A	Top Cover	1
02	—	Chassis Ass'y	1
03	JA04339A	Bottom Cover Ass'y (CR-4 & CR-4E)	1
	JA04338A	Bottom Cover Ass'y (CR-4A)	1
	JA04341A	Bottom Cover Ass'y (CR-40)	1
04	HA05348A	Cassette Case Cover Ass'y	1
05	0H05278A	Front Panel (CR-4)	1
	0H05167A	Front Panel (CR-4A)	1
	0H05280A	Front Panel (CR-4E)	1
	0H05279A	Front Panel (CR-40)	1
06	HA05340A	Rec. Volume Knob Ass'y	1
07	HA05338A	Rec. Balance Knob Ass'y	1
08	HA05339A	Bias Volume Knob Ass'y	3
09	0J05453A	Top Cover Cushion	3
10	0J05407A	Top Cover Sheet	3
11	0H05103A	LED Lens B	1
L01	0E03433A	BT3x6 ⊕ Binding Projected (Black Chromate)	11
L02	0E00921A	BT3x8 ⊖ Binding (Black Chromate)	8
L03	0E03054A	BT3x8 ⊖ Countersunk	3
—	0J05460A	Adhesive Tape for LED Lens	1
—	0M03797A	Voltage Seal 240V (CR-4E (UK))	1
—	0M03844B	Power Cord Label (CR-4E (UK))	1
—	0M03917A	Production Date Seal (CR-4A)	1
—	0M04381A	EP Approval Label (CR-4E (Europe))	1
—	0M04811A	Voltage Caution Sheet (CR-4 (Other & Saudi Arabia))	1
—	0M05065A	Pass Label (CR-4A)	1
—	0M05067A	CSA Approval Label (CR-4A (Canada))	1
—	0M05068A	LA Label (CR-4A (U.S.A.))	1
—	0M05075A	Serial Number Seal (CR-4, CR-4E & CR-40)	1
—	0M05074A	Serial Number Seal (CR-4A)	1
—	0M05077A	Voltage Caution Label 127V (CR-4 (Saudi Arabia))	1
—	0M05111A	F. Mark Approval Seal (CR-4E (Europe))	1
—	0M05116A	Amp. Number Seal	1
—	MA01001A	F. Code Labels (CR-4, CR-4E & CR-40)	1

7.2. Chassis Ass'y (A01)

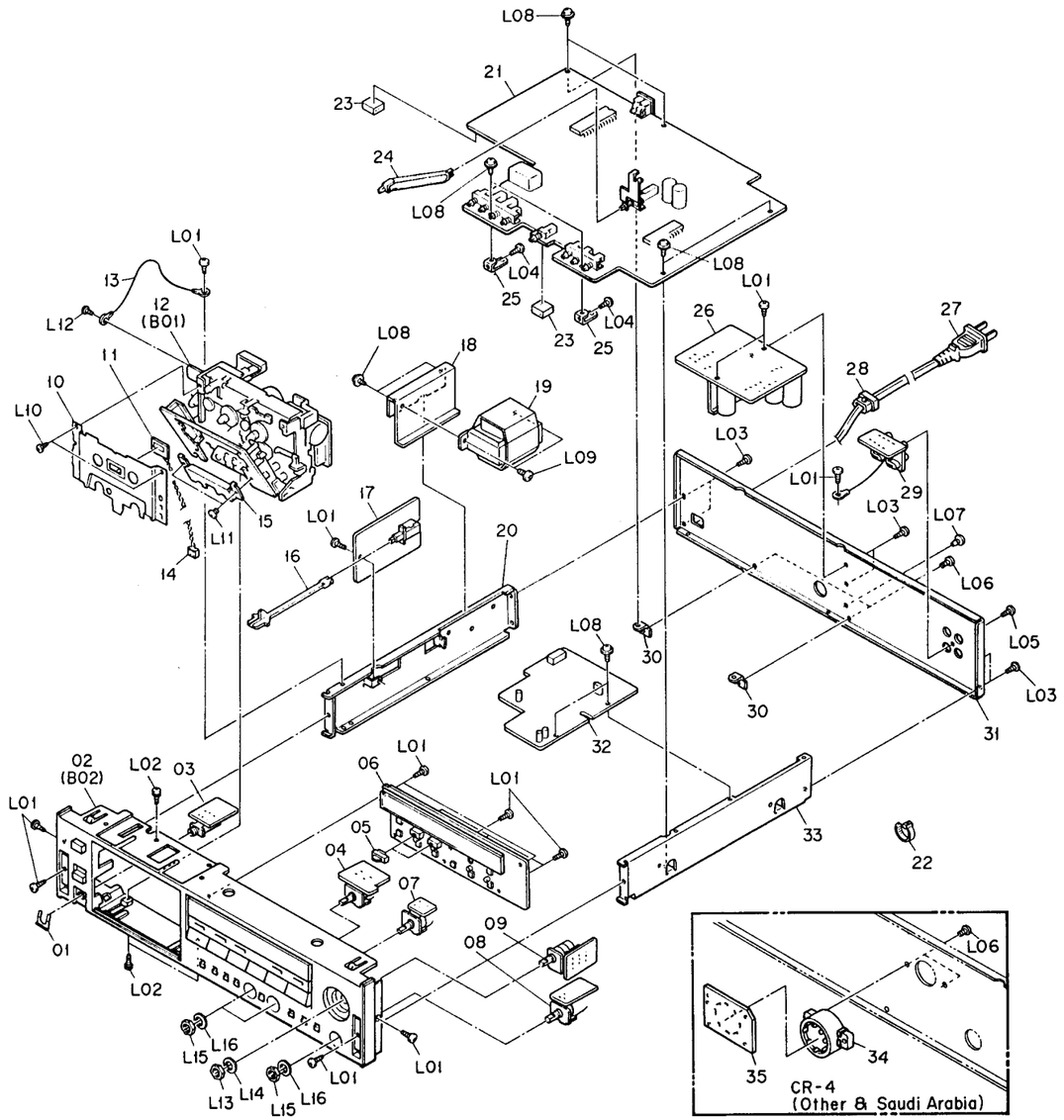


Fig. 7.2

Schematic Ref. No.	Part No.	Description	Q'ty
7.2. Chassis Ass'y (A01)			
A01	—	Chassis Ass'y Serial No.: A13101001 -	1
01	0J05427A	Mount Plate	1
02	HA05342A	Front Escutcheon Ass'y	1
03	BA07052A	Headphone P.C.B. Ass'y (CR-4, CR-4A, CR-4E (UK) & CR-40)	1
	BA07152A	Headphone P.C.B. Ass'y (CR-4E (Europe))	1
04	BA07011A	Bias P.C.B. Ass'y	1
05	0H05095A	Slide Button	2
06	BA07042A	Control P.C.B. Ass'y	1
07	BA07010A	Level Adjustment P.C.B. Ass'y	1
08	BA07051A	Output Volume P.C.B. Ass'y	1
09	BA07054A	Input Volume P.C.B. Ass'y	1
10	0H05166A	Cover Plate	1
11	0B12580A	LED P Green SLF-7250	1
12	CA08889A	Mechanism Ass'y	1
13	0B83255A	GND Wire Ass'y	1
14	0B83132A	2P Connector	1
15	0H04415B	Head Mounting Cover	1
16	0J05402A	Power Switch Joint	1
17	BA07045A	Fuse P.C.B. Ass'y (CR-4 & CR-4E)	1
	BA07044A	Fuse P.C.B. Ass'y (CR-4A)	1
	BA07046A	Fuse P.C.B. Ass'y (CR-40)	1
18	0J05417C	Transformer Holder	1
19	0B50100A	Power Transformer (CR-4 (Australia) & CR-4E)	1
	0B50101A	Power Transformer (CR-4 (Other & Saudi Arabia))	1
	0B50099A	Power Transformer (CR-4A)	1
	0B50102A	Power Transformer (CR-40)	1
20	0J05456A	Side Chassis L	1
21	BA07188A	Main P.C.B. Ass'y Serial No.: A13102451 - (CR-4A) Serial No.: A13153801 - (CR-4, CR-4E & CR-40)	1
	BA07030A	Main P.C.B. Ass'y Serial Nos: A13101001 - 02450 (CR-4A) Serial Nos.: A13150001 - 53800 (CR-4, CR-4E & CR-40)	1
22	0B08515A	Insu-Lock SKB80	21
23	0J05451A	P.C.B. Cushion	2
24	0J05403A	Monitor Switch Joint	1
25	0J05394A	P.C.B. Holder Front	2
26	BA07041A	Power Supply P.C.B. Ass'y	1
27	0B05241A	Power Cord (CR-4 (Australia))	1
	0B08533A	Power Cord (CR-4 (Other & Saudi Arabia))	1
	0B90294A	Power Cord (OFC) (CR-4A)	1
	0B08093U	Power Cord (CR-4E (Europe))	1
	0B08348A	Power Cord (CR-4E (UK))	1
	0B90293A	Power Cord (OFC) (CR-40)	1
28	0B90280A	Cord Bushing	1
29	BA07055A	Pin Jack P.C.B. Ass'y	1
30	0J05395A	P.C.B. Holder Rear	2
31	0H05172A	Rear Panel (CR-4 (Australia))	1
	0H05174A	Rear Panel (CR-4 (Other & Saudi Arabia))	1
	0H05171B	Rear Panel (CR-4A)	1
	0H05173A	Rear Panel (CR-4E)	1
	0H05175A	Rear Panel (CR-40)	1
32	BA07192A	Cal. Osc. P.C.B. Ass'y Serial No.: A13102451 - (CR-4A) Serial No.: A13153801 - (CR-4, CR-4E & CR-40)	1
	BA07008B	Cal. Osc. P.C.B. Ass'y Serial Nos.: A13101001 - 02450 (CR-4A) Serial Nos.: A13150001 - 53800 (CR-4, CR-4E & CR-40)	1
33	0J05455A	Side Chassis R	1
34	0B81771A	Voltage Selector (CR-4 (Other & Saudi Arabia))	1
35	0B60503A	Voltage Selector P.C.B. (CR-4 (Other & Saudi Arabia))	1
L01	0E00868A	BT3x8 ⊕ Binding	15
L02	0E03212A	BT2.6x6 ⊕ Binding with Toothed Lock	3
L03	0E03433A	BT3x6 ⊕ Binding Projected (Black Chromate)	6
L04	0E00846A	BT3x8 ⊕ Pan	2
L05	0E00921A	BT3x8 ⊕ Binding (Black Chromate)	1
L06	0E00985A	M3x6 ⊕ Binding (Black Chromate) (CR-4 (Australia) & CR-4A, CR-4E & CR-40)	2
	0E00985A	M3x6 ⊕ Binding (Black Chromate) (CR-4 (Other & Saudi Arabia))	4
L07	0J05108A	Hole Plug No.9	1
L08	0E03432A	BT3x6 ⊕ Tapping (Black Chromate)	10
L09	0E03438A	ST4x6 ⊕ Binding	2
L10	0E03437A	BT2.5x3.5 ⊕ Pan (Black Chromate)	2
L11	0E03202A	M2.6x3 ⊕ Binding (Black Chromate)	2
L12	0E00859A	BT2.6x6 ⊕ Binding	1
L13	0E03375A	Nut Hex. M9	1
L14	0E03376A	Washer 9mm	1
L15	0E03382A	Nut Hex. M7	3
L16	0E03383A	Washer 7mm	3
—	0B80142A	Wire (CR-4 (Other & Saudi Arabia))	1
—	0J05462A	BS Damper 15x30 (CR-40)	2
—	0J05463A	BS Damper 15x60 (CR-40)	1
—	0J05464A	P.C.B. Cushion B (CR-40)	1
—	0M05112A	Fuse Caution Label (CR-4A)	1

Schematic Ref. No.	Part No.	Description	Q'ty
7.3. Bottom Cover Ass'y (A02)			
A02	JA04339A	Bottom Cover Ass'y (CR-4 & CR-4E)	1
	JA04338A	Bottom Cover Ass'y (CR-4A)	1
	JA04341A	Bottom Cover Ass'y (CR-40) Serial No.: A13101001 -	1
01	0J05454A	Bottom Cover	1
02	0J05420A	Leg N (CR-4, CR-4A & CR-4E)	4
	HA05357A	Leg Ass'y (CR-40)	4
03	0M04377B	Caution Label (CR-4A)	1
L01	0E00888A	BT3x12 ⊕ Binding	4
—	0J05461A	Leg Felt (CR-4, CR-4A & CR-4E)	4

7.3. Bottom Cover Ass'y (A02)

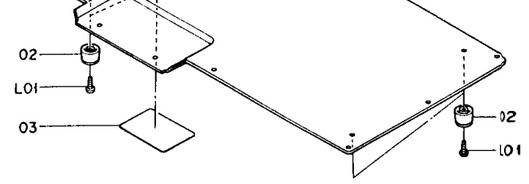


Fig. 7.3

7.4. Mechanism Ass'y (B01)

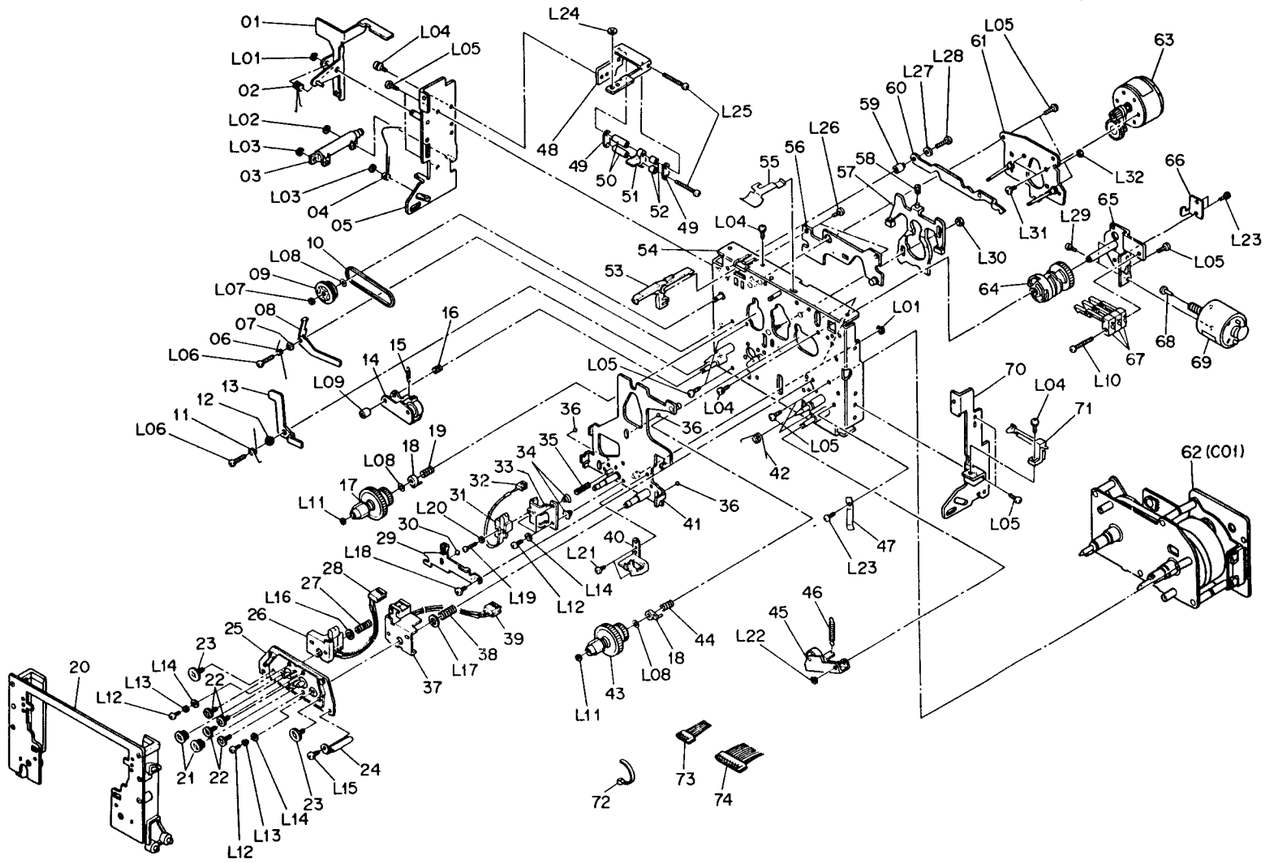


Fig. 7.4

7.5. Front Escutcheon Ass'y (B02)

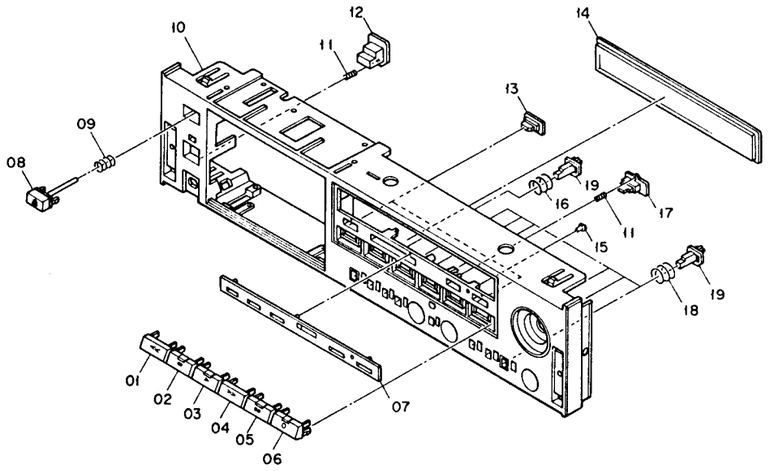


Fig. 7.5

7.6. D.D. Motor Ass'y (C01)

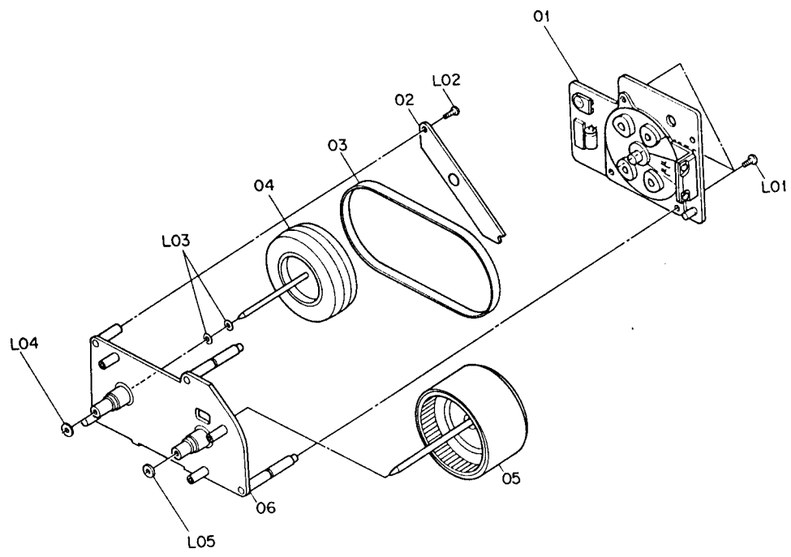


Fig. 7.6

Schematic Ref. No.	Part No.	Description	Q'ty
7.4. Mechanism Ass'y (B01)			
B01	CA08889A	Mechanism Ass'y Serial No.: A13101001 -	1
01	0C80021A	Eject Lever	1
02	0C80020A	Eject Lever Spring	1
03	CA80006A	Pneumatic Damper Ass'y	1
04	0C80019B	Eject Spring	1
05	0C80018B	Cassette Case Holder L	1
06	0C80617A	Back Tension Arm Spring	1
07	0C80618A	Back Tension Arm Collar	1
08	0C80619A	Back Tension Arm	1
09	0C80620A	Back Tension Pulley	1
10	0C80621A	Back Tension Belt	1
11	0C80013A	Lock Lever Spring	1
12	0C80014A	Lock Lever Collar	1
13	0C80015B	Lock Lever	1
14	CA80366A	Supply Pressure Roller Arm Ass'y	1
15	0C81420A	Supply Pressure Roller Arm Spring	1
16	0C81422A	Supply Pressure Roller Arm Thrust Spring	1
17	CA80726A	Supply Reel Hub Ass'y	1
18	0C80612A	Spring Holder	2
19	0C80614A	Supply Reel Hub Spring	1
20	CA80200A	Cassette Case Ass'y	1
21	0C08762A	Head Height Adjustment Gear	2
22	0C08761A	Head Height Adjustment Screw	4
23	0C08763A	Azimuth Alignment Screw	2
24	0C80605A	Wire Clamper	1
25	CA08637A	Head Mount Base Sub Ass'y	1
26	CA08659B	R-3L Record Head Ass'y	1
27	0C08776A	Head Plate Spring (L)	1
28	CA80731A	4P Connector	1
29	0C80003A	Head Base Hold Plate	1
30	0C80004A	Steel Ball 3mm	1
31	GA02201A	E-4F Erase Head	1
32	CA80733A	2P Connector	1
33	0C08768A	Erase Head Hold Plate	1
34	0C08889A	Erase Head Hold Plate Tapering Spring	2
35	0C08886A	Erase Head Hold Plate Spring	1
36	0C80007A	Steel Ball 2mm	3
37	CA08658B	P2H-L Playback Head Ass'y	1
38	0C08775A	Head Plate Spring (R)	1
39	CA80732A	4P Connector	1
40	0C08771A	Tape Guide Plate	1
41	CA80365A	Head Base Sub Ass'y	1
42	0C80611A	Head Base Spring	1
43	CA80725A	Take-up Reel Hub Ass'y	1
44	0C80613A	Take-up Reel Hub Spring	1
45	CA80368A	Take-up Pressure Roller Arm Ass'y	1
46	0C81423A	Supply Pressure Roller Arm Spring	1
47	0C80610A	Cassette Case Spring	1
48	0C80622A	Switch Hold Plate	1
49	0C80623A	Switch Plate	2
50	0C80624A	Switch Collar A	2
51	0C80626A	Leaf Switch	1
52	0C80625A	Switch Collar B	2
53	0C80017B	Record Protect Lever	1
54	CA80367A	Mechanism Chassis	1
55	0C80022B	Cassette Hold Spring	1
56	CA80011A	Shut-off P.C.B. Ass'y	1
57	CA80204A	Brake Ass'y	1
58	0C80628A	Brake Spring B	1
59	0C80630A	Brake Arm Collar	1
60	0C80629A	Brake Arm	1
61	0C80030A	Reel Motor Holder	1
62	CA80364A	D.D. Motor Ass'y	1
63	CA80730A	Reel Motor Ass'y	1
64	0C81417A	Cam Gear	1
65	0C81418A	Control Motor Holder	1
66	0C81416A	Thrust Spring B	1
67	0C80027A	Mode Switch	1
68	0C81415A	Warm Thrust Bush	1
69	CA80007A	Control Motor Ass'y	1
70	0C80010D	Cassette Case Holder R	1
71	0C80012A	Eject Sensor	1
72	0C80037A	Insu-Lock	3
73	0C82935A	5P Connector	1
74	0C82936A	9P Connector	1
L01	0E00181A	E-Ring 3mm	3
L02	0E03235A	Plastic Washer 2x5x0.25	1
L03	0E03052A	CS Stopper Ring 2.4mm	2
L04	0E03236A	M2x5 ⊕Pan (2A)	4
L05	0E03229A	FT2.5x6 ⊕Pan	10
L06	0E03043A	FT2.5x10 ⊕Pan	2
L07	0E03225A	Washer 1.8x3.8x0.5	1
L08	0E03226A	Washer 2.1x4.5x0.1	3
L09	0C81421A	Supply Tape Guide Adjustment Nut	1
L10	0E03044A	FT2.5x20 ⊕Pan	1
L11	0E03049A	Washer 1.8x3.2x0.5	2
L12	0E00976A	M2x5 ⊕Binding	5
L13	0E00025A	Spring Washer 2mm	2
L14	0E00117A	Washer 2x4.3x0.4	5
L15	0E00866A	M2.6x4 ⊕Binding	1
L16	0C08774A	Plate Washer L	1
L17	0C08773A	Plate Washer R	1
L18	0E03228A	FT3x4 ⊕Pan	1
L19	0E03232A	M1.7x7 ⊕Pan	1
L20	0E03222A	Washer 1.8x3.8x0.3	1
L21	0E03234A	M2x3 ⊕Pan	2
L22	0E00222A	E-Ring 2mm	1
L23	0E03035A	M2x3.2 ⊕Truss	3
L24	0E03227A	Washer 2.7x5x0.5	2
L25	0E03231A	M2x30 ⊕Pan	2
L26	0E03041A	FT2.5x4 ⊕Pan	2
L27	0E03233A	Washer 2.6x8x1	1
L28	0E03230A	FT2.6x12 ⊕Pan	1
L29	0E00691A	M2x3 ⊕Pan (Nickel)	2
L30	0E03237A	Nut Hex. M2.6	1
L31	0E03045A	M2.6x3 ⊕Binding	2
L32	0E00694A	Nut Hex. M2	1
7.5. Front Escutcheon Ass'y (B02)			
B02	HA05342A	Front Escutcheon Ass'y Serial No.: A13101001 -	1
01	0H05126A	Rewind Button	1
02	HA05359A	Stop Button Ass'y	1
03	HA05343A	Play Button Ass'y	1
04	0H05129A	FF Button	1
05	HA05361A	Pause Button Ass'y	1
06	HA05360A	Rec. Button Ass'y	1
07	0H05098A	Function Plate	1
08	HA05344A	Eject Button Ass'y	1
09	0J05404A	Eject Knob Spring	1
10	0H05122B	Front Escutcheon	1
11	0J05405A	Power Switch Knob Spring	2
12	0H05125B	Power Switch Knob	1
13	0H05094A	Function Button	2
14	0H05101A	Display Lens	1
15	0H05103A	LED Lens B	1
16	0J05452B	EX Switch Spring	1
17	0H05096A	Button (Monitor)	1
18	0J05406A	Push Switch Button Spring	7
19	0H05097A	Push Button	8
—	0J05458A	LED Lens Adhesive Tape	1
—	0J05459A	F. Plate Adhesive Tape	1
7.6. D.D. Motor Ass'y (C01)			
C01	CA80364A	D.D. Motor Ass'y Serial No.: A13101001 -	1
01	CA80444A	Flywheel Holder Ass'y	1
02	0C81464A	Supply Flywheel Holder	1
03	0C80634A	Capstan Belt	1
04	0C81429A	Supply Flywheel Ass'y	1
05	0C81427A	Take-up Flywheel Ass'y	1
06	0C81426A	Motor Plate	1
L01	0E03349A	FT3x5 ⊕Pan	3
L02	0E03229A	FT2.5x6 ⊕Pan	1
L03	0E00912A	Washer 2.6x4.7x0.25 (Polyslider)	2
L04	0E03348A	Capstan Washer S	1
L05	0E03051A	Washer 2.5x7x0.8	1

8. MOUNTING DIAGRAMS AND PARTS LIST

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
3. Following transistors are interchangeable with each other.
   a. 2SA733, 2SA608SP, 2SA1048, 2SA1175
   b. 2SC945, 2SC536SP, 2SC2458, 2SC2785
4. Abbreviation for part name:
   TR — Transistor, SiD — Silicon Diode, ZD — Zener Diode
   RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor
   CE — Electrolytic Capacitor, CML — Mylar Capacitor, CC — Ceramic Capacitor, CPP — PP Capacitor,
   CMM — Metalized Mylar Capacitor, CSP — Polystyrene Capacitor, C — Mica Capacitor

8.1. Fuse P.C.B. Ass'y

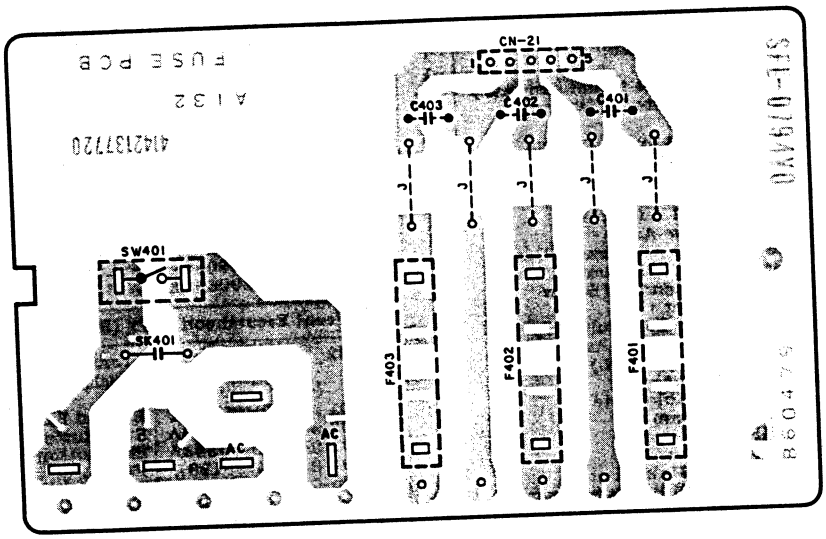


Fig. 8.1

8.2. Pin Jack P.C.B. Ass'y

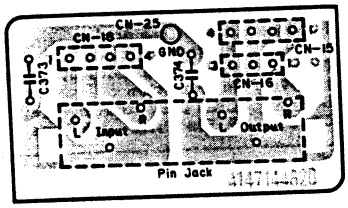


Fig. 8.2

8.3. Input Volume P.C.B. Ass'y

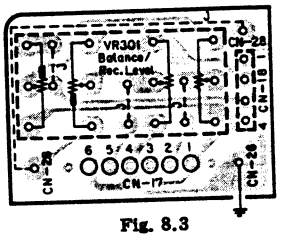


Fig. 8.3

Schematic Ref. No.	Part No.	Description
8.1. Fuse P.C.B. Ass'y		
	BA07045A	Fuse P.C.B. Ass'y (CR-4 & CR-4E)
	BA07044A	Fuse P.C.B. Ass'y (CR-4A)
	BA07046A	Fuse P.C.B. Ass'y (CR-40)
	0B60479A	Fuse P.C.B.
C401,402	0B09292A	CC 0.1μ 50V Z
C403	0B09292A	CC 0.1μ 50V Z
F401	0B90285A	Fuse 1.6A (CR-4A)
F401	0B90289A	Fuse T1A 250V (CR-4 & CR-4E)
F401	0B90291A	Fuse 1.6A (CR-40)
F402,403	0B90285A	Fuse 1.6A (CR-4A)
F402,403	0B90289A	Fuse T1A 250V (CR-4 & CR-4E)
F402,403	0B90291A	Fuse 1.6A (CR-40)
SK401	0B41929A	CC 4700P (CR-4, CR-4A & CR-4E)
SK401	0B41826A	CC 4700P (CR-40)
CN21	0B83122A	5P Connector
SW401	0B71008A	Power Switch (CR-4, CR-4A & CR-4E)
SW401	0B71006A	Power Switch (CR-40)
	0B81776A	Contact Pin (CR-4 & CR-4E) (5)
	0B81848A	Fuse Holder (6)
	0M04131B	Fuse Label T1A 250Vx2 (CR-4 & CR-4E) (1)
	0M04191A	Fuse Label T1A 250V (CR-4 & CR-4E) (1)
8.2. Pin Jack P.C.B. Ass'y		
	BA07055A	Pin Jack P.C.B. Ass'y
	0B60521A	Pin Jack P.C.B.
C373,374	0B41007A	CC 1000P 25V M
CN16	0B83121A	3P Connector
CN18	0B83120A	4P Connector
	0B81756A	4P Pin Jack GOLD (1)
	0B83133A	Ground Ass'y (1)
8.3. Input Volume P.C.B. Ass'y		
	BA07054A	Input Volume P.C.B. Ass'y
	0B60522A	Input Volume P.C.B.
VR301	0B30077A	Volume 100KAx2
CN28	0B02362B	PD Connector
	0J05419A	Volume Earth Plate (1)
	0V10050C	Wire 12mm BLK (1)

8.4. Output Volume P.C.B. Ass'y

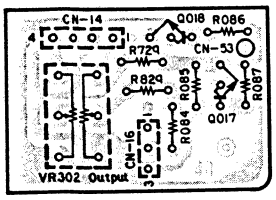


Fig. 8.4

8.5. Headphone P.C.B. Ass'y

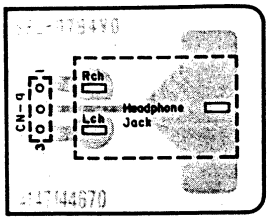


Fig. 8.5

8.6. Level Adjustment P.C.B. Ass'y

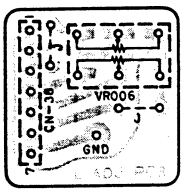


Fig. 8.6

8.7. Bias P.C.B. Ass'y

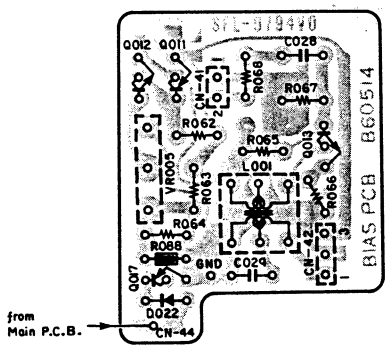


Fig. 8.7

8.8. Shut-off P.C.B. Ass'y

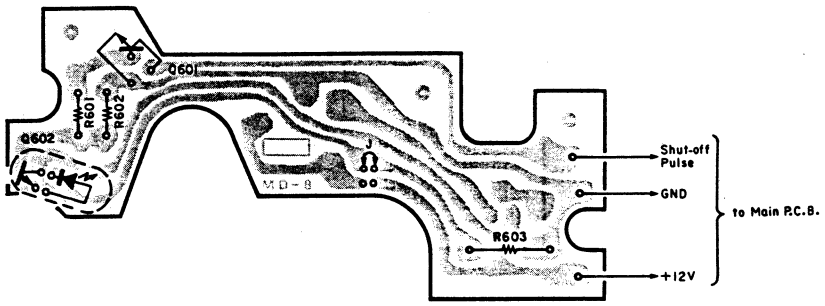


Fig. 8.8

Schematic Ref. No.	Part No.	Description
8.4. Output Volume P.C.B. Ass'y		
	BA07051A	Output Volume P.C.B. Ass'y
	0B60523A	Output Volume P.C.B.
Q017,018	0B06299A	TR 2SC2878
VR302	0B30078A	Volume 10KAx2
R084,085	0B22233A	RM 1.10K 1/6W F
R086,087	0B09701A	RK 10K 1/6W J
R729	0B22233A	RM 1.10K 1/6W F
R829	0B22233A	RM 1.10K 1/6W F
	0J05419A	Volume Earth Plate (1)
	0V10050C	Wire 52mm BLK (1)
	0V15450C	Wire 450mm GRN (1)
8.5. Headphone P.C.B. Ass'y		
	BA07052A	Headphone P.C.B. Ass'y (CR-4, CR-4A, CR-4E (UK) & CR-40)
	BA07152A	Headphone P.C.B. Ass'y (CR-4E (Europe))
	0B60526A	Headphone P.C.B.
	0B81777A	Heaphone Jack GOLD (1)
	0B83133A	GND Ass'y 80 (1) (CR-4E (Europe))

Schematic Ref. No.	Part No.	Description
8.6. Level Adjustment P.C.B. Ass'y		
	BA07010A	Level Adjustment P.C.B. Ass'y
	0B60513A	Level Adjustment P.C.B.
VR006	0B30086A	Volume 10KBx2
CN38	0B83143A	7P Connector
	0J05419A	Volume Earth Plate (1)
	0V10050C	Jumper Wire 52 BLK (1)
8.7. Bias P.C.B. Ass'y		
	BA07011A	Bias P.C.B. Ass'y
	0B60514A	Bias P.C.B.
Q011	0B06069A	TR 2SB564 (L,M)
Q012	0B01872A	TR 2SC945L (P,Q)
Q013	0B10023A	TR 2SC2002 (K)
Q017	0B10053A	TR DTA144ES R1,R2=47K
D022	0B12249A	SiD 1SS133
L001	0B51254A	Coil 105K
VR005	0B30085A	Volume 10KB
R062	0B09653A	RK 100 1/6W J
R063	0B09665A	RK 330 1/6W J
R064	0B09701A	RK 10K 1/6W J
R065	0B09733A	RK 220K 1/6W J
R066	0B09753A	RK 4.7 1/4W J
R067	0B09701A	RK 10K 1/6W J
R068	0B09709A	RK 22K 1/6W J
R088	0B19006A	Thermistor 3.3K
C028	0B41092A	CML 6800P 50V
C029	0B41259A	CPP 0.027μ 100V J
CN41	0B83146A	2P Connector
CN42	0B83147A	3P Connector
CN44	0B83199A	2P Connector
	0J05419A	Volume Earth Plate (1)
	0V10050C	Jumper Wire 52 BLK (1)

Schematic Ref. No.	Part No.	Description
8.8. Shut-off P.C.B. Ass'y		
	CA80011A	Shut-off P.C.B. Ass'y
	0C80047A	Shut-off P.C.B.
Q601	0B06388A	TR 2SC2812
Q602	0B06389A	Photo Reflector NJL5141
R601	0B09840A	RK 680 Leadless
R602	0B09841A	RK 15K Leadless
R603	0C81330A	RM 750
	0C81334A	Wire 0V131 30N (1)
	0C81335A	Wire 0V101 15N (1)

8.9. Power Supply P.C.B. Ass'y

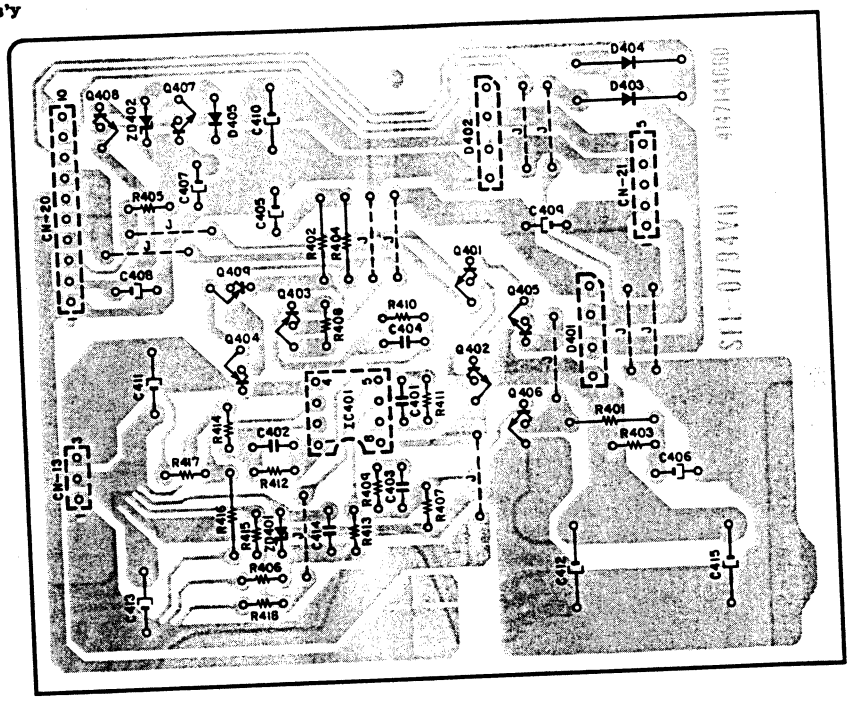


Fig. 8.9

8.10. Cal. Osc. P.C.B. Ass'y

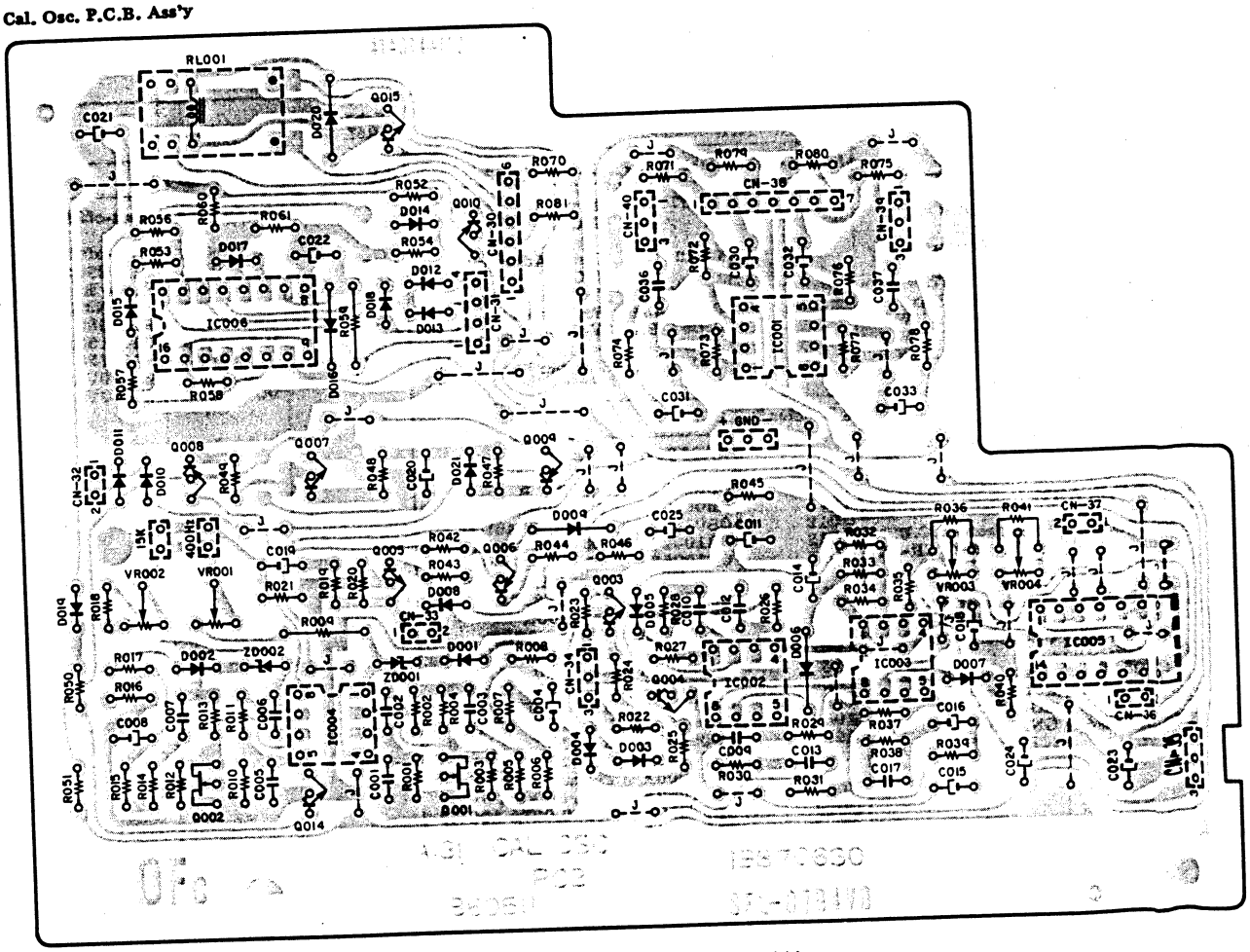


Fig. 8.10.1 Serial No.: A13102451 - (CR-4A)
A13153801 - (CR-4/4E/40)

Schematic Ref. No.	Part No.	Description
8.9. Power Supply P.C.B. Ass'y		
	BA07041A	Power Supply P.C.B. Ass'y
	0B60525A	Power Supply P.C.B.
IC401	0B06217A	IC NJM4560M
Q401,402	0B06452A	TR 2SD1406 (Y)
Q403	0B06013A	TR 2SA733 (P,Q)
Q404	0B06451A	TR 2SB1015 (Y)
Q405,406	0B01872A	TR 2SC945L (P,Q)
Q407	0B01872A	TR 2SC945L (P,Q)
Q408	0B06452A	TR 2SD1406 (Y)
Q409	0B06013A	TR 2SA733 (P,Q)
ZD401	0B12147A	ZD 5.1V RD5.1JS-T1B2
ZD402	0B12150A	ZD 5.6V RD5.6JS-T1B2
D401,402	0B06282A	SiD DBA10B.C.
D403,404	0B12586A	SiD 1N4002
D405	0B06398A	SiD 1SS176
R401,402	0B01679A	RK 100 1/4W J
R403	0B09677A	RK 1K 1/6W J
R404	0B01857A	RK 1K 1/4W J
R405	0B09677A	RK 1K 1/6W J
R406	0B09681A	RK 1.5K 1/6W J
R407,408	0B09693A	RK 4.7K 1/6W J
R409,410	0B09701A	RK 10K 1/6W J
R411,412	0B09749A	RK 1M 1/6W J
R413,414	0B22310A	RM 5.11K 1/6W F
R415	0B22343A	RM 10.0K 1/6W F
R416	0B09504A	RM 11K 1/4W F
R417	0B22347A	RM 11.0K 1/6W F
R418	0B22357A	RM 13.7K 1/6W F
C401,402	0B09393A	CC 68P 50V J
C403,404	0B05652A	CML 4700P 50V J
C405,406	0B01272A	CE 100μ 25V
C407	0B01400A	CE 100μ 16V
C408	0B05899A	CE 220μ 10V
C409	0B01401A	CE 470μ 25V
C410	0B40362A	CE 6800μ 16V
C411	0B40361A	CE 2200μ 16V
C412	0B40476A	CE 8200μ 25V M
C413	0B09377A	CE 4700μ 16V
C414	0B41386A	CPP 100P 50V J
C415	0B40476A	CE 8200μ 25V M
CN21	0B81762A	5P-T Post
MJ	0B80151B	Wire 80mm BLK
	0B90297A	Isolation Sheet (1)
	0E00037A	Earth Lug (1)
	0E00985A	M3x6 ⊕ Binding (Black Chromate)(2)
	0J05415A	Heat Sink (1)

Schematic Ref. No.	Part No.	Description
8.10.1. Cal. Osc. P.C.B. Ass'y		
	BA07192A	Cal. Osc. P.C.B. Ass'y Serial No.: A13102451-(CR-4A) A13153801-(CR-4/4E/40)
	0B60511A	Cal. Osc. P.C.B.
IC001,002	0B06124B	IC NJM4558D
IC003,004	0B06124B	IC NJM4558D
IC005	0B06144A	IC μPD4066BC
IC006	0B11066A	IC LC4049B
Q001,002	0B10022A	FET 2SK246 (GR)
Q003,004	0B01872A	TR 2SC945L (P,Q)
Q005	0B01872A	TR 2SC945L (P,Q)
Q006	0B10058A	TR DTA114ES
Q007	0B01872A	TR 2SC945L (P,Q)
Q008	0B06013A	TR 2SA733 (P,Q)
Q009,010	0B10053A	TR DTA144ES
Q014	0B01872A	TR 2SC945L (P,Q)
Q015	0B10023A	TR 2SC2002 (K)
ZD001,002	0B12442A	ZD 7.5V UTZJ7.5B
D001,002	0B12249A	SiD 1SS133
D003,004	0B12249A	SiD 1SS133
D005	0B12249A	SiD 1SS133
D006	0B12584A	SiD 1N4148
D007,008	0B12249A	SiD 1SS133
D009	0B12584A	SiD 1N4148
D010,011	0B12249A	SiD 1SS133
D012,013	0B12249A	SiD 1SS133
D014,015	0B12249A	SiD 1SS133
D016	0B12584A	SiD 1N4148
D017,018	0B12249A	SiD 1SS133
D019	0B12249A	SiD 1SS133
D020	0B12584A	SiD 1N4148
D021	0B12249A	SiD 1SS133
VR001,002	0B32130A	Semi VR 100KB
VR003,004	0B32127A	Semi VR 10KB
R001	0B09676A	RK 910 1/6W J
R002	0B09711A	RK 27K 1/6W J
R003	0B09733A	RK 220K 1/6W J
R004	0B09719A	RK 56K 1/6W J
R005	0B09749A	RK 1M 1/6W J
R006	0B09699A	RK 8.2K 1/6W J
R007	0B09741A	RK 470K 1/6W J
R008	0B09701A	RK 10K 1/6W J
R009	0B05626A	RK 150K 1/4W J
R010	0B09676A	RK 910 1/6W J
R011	0B09709A	RK 22K 1/6W J
R012	0B09733A	RK 220K 1/6W J
R013	0B09719A	RK 56K 1/6W J
R014	0B09749A	RK 1M 1/6W J
R015	0B09699A	RK 8.2K 1/6W J
R016	0B09741A	RK 470K 1/6W J
R017	0B09701A	RK 10K 1/6W J
R018	0B09729A	RK 150K 1/6W J
R019	0B09685A	RK 2.2K 1/6W J
R020	0B09709A	RK 22K 1/6W J
R021	0B09653A	RK 100 1/6W J
R022,023	0B09701A	RK 10K 1/6W J
R024,025	0B09709A	RK 22K 1/6W J
R026	0B09725A	RK 100K 1/6W J
R027	0B09729A	RK 150K 1/6W J
R028	0B09679A	RK 1.2K 1/6W J
R029	0B09725A	RK 100K 1/6W J
R030	0B09729A	RK 150K 1/6W J
R031	0B09679A	RK 1.2K 1/6W J
R032,033	0B09701A	RK 10K 1/6W J
R034	0B09694A	RK 5.1K 1/6W J
R035	0B09689A	RK 3.3K 1/6W J
R036	0B09701A	RK 10K 1/6W J
R037	0B09725A	RK 100K 1/6W J
R038	0B09729A	RK 150K 1/6W J
R039	0B09679A	RK 1.2K 1/6W J
R040	0B09657A	RK 150 1/6W J
R041	0B09701A	RK 10K 1/6W J
R042	0B09725A	RK 100K 1/6W J
R043,044	0B09701A	RK 10K 1/6W J
R045,046	0B09725A	RK 100K 1/6W J
R047,048	0B09709A	RK 22K 1/6W J
R049	0B09677A	RK 1K 1/6W J
R050	0B09701A	RK 10K 1/6W J
R051	0B09725A	RK 100K 1/6W J
R052	0B09741A	RK 470K 1/6W J
R053	0B09669A	RK 470 1/6W J
R054	0B09741A	RK 470K 1/6W J
R056,057	0B09725A	RK 100K 1/6W J
R058	0B09749A	RK 1M 1/6W J
R059	0B05676A	RK 390K 1/4W J
R060,061	0B09725A	RK 100K 1/6W J
R070,071	0B09701A	RK 10K 1/6W J
R072	0B09733A	RK 220K 1/6W J
R073	0B09725A	RK 100K 1/6W J
R074	0B09723A	RK 82K 1/6W J
R075	0B09701A	RK 10K 1/6W J
R076	0B09733A	RK 220K 1/6W J
R077	0B09725A	RK 100K 1/6W J
R078	0B09723A	RK 82K 1/6W J
R079,080	0B09701A	RK 10K 1/6W J
R081	0B09677A	RK 1K 1/6W J
C001	0B41306A	CMM 0.47μ 50V J
C002	0B41288A	CML 0.015μ 50V J
C003	0B41098A	CML 0.022μ 50V J
C004	0B01405A	CE 1μ 50V
C005	0B09856A	CML 0.01μ 50V J
C006	0B41215A	CPP 390P 100V J
C007	0B41098A	CML 0.022μ 50V J
C008	0B01405A	CE 1μ 50V
C009	0B41221A	CPP 680P 100V J
C010	0B41287A	CML 0.012μ 50V J
C011	0B01862A	CE 22μ 16V
C012	0B41221A	CPP 680P 100V J
C013	0B41287A	CML 0.012μ 50V J
C014	0B01862A	CE 22μ 16V
C015,016	0B01405A	CE 1μ 50V
C017	0B41221A	CPP 680P 100V J
C018,019	0B01412A	CE 10μ 16V
C020	0B40076A	CE 33μ 16V
C021	0B01412A	CE 10μ 16V
C022	0B01405A	CE 1μ 50V
C023,024	0B01397A	CE 1000μ 16V
C025	0B01412A	CE 10μ 16V
C030,031	0B09814A	CE 1μ 50V (LN)
C032,033	0B09814A	CE 1μ 50V (LN)
C036,037	0B40473A	CE 10μ 16V (BP)
RL001	0B90301A	Relay 12V MR52-12S
CN30	0B81638A	6P-T Post
CN31	0B81636A	4P-T Post
CN32	0B83137A	2P-T Post
CN33	0B83138A	2P Connector
CN34	0B83139A	3P Connector
CN35	0B83140A	3P Connector
CN36,37	0B81634A	2P-T Post
CN38	0B81639A	7P-T Post
CN39	0B83144A	3P Connector
CN40	0B83145A	3P Connector
	0B81773A	Receptacle 2P Female (2)
	0B81774A	Receptacle 2P Male (2)

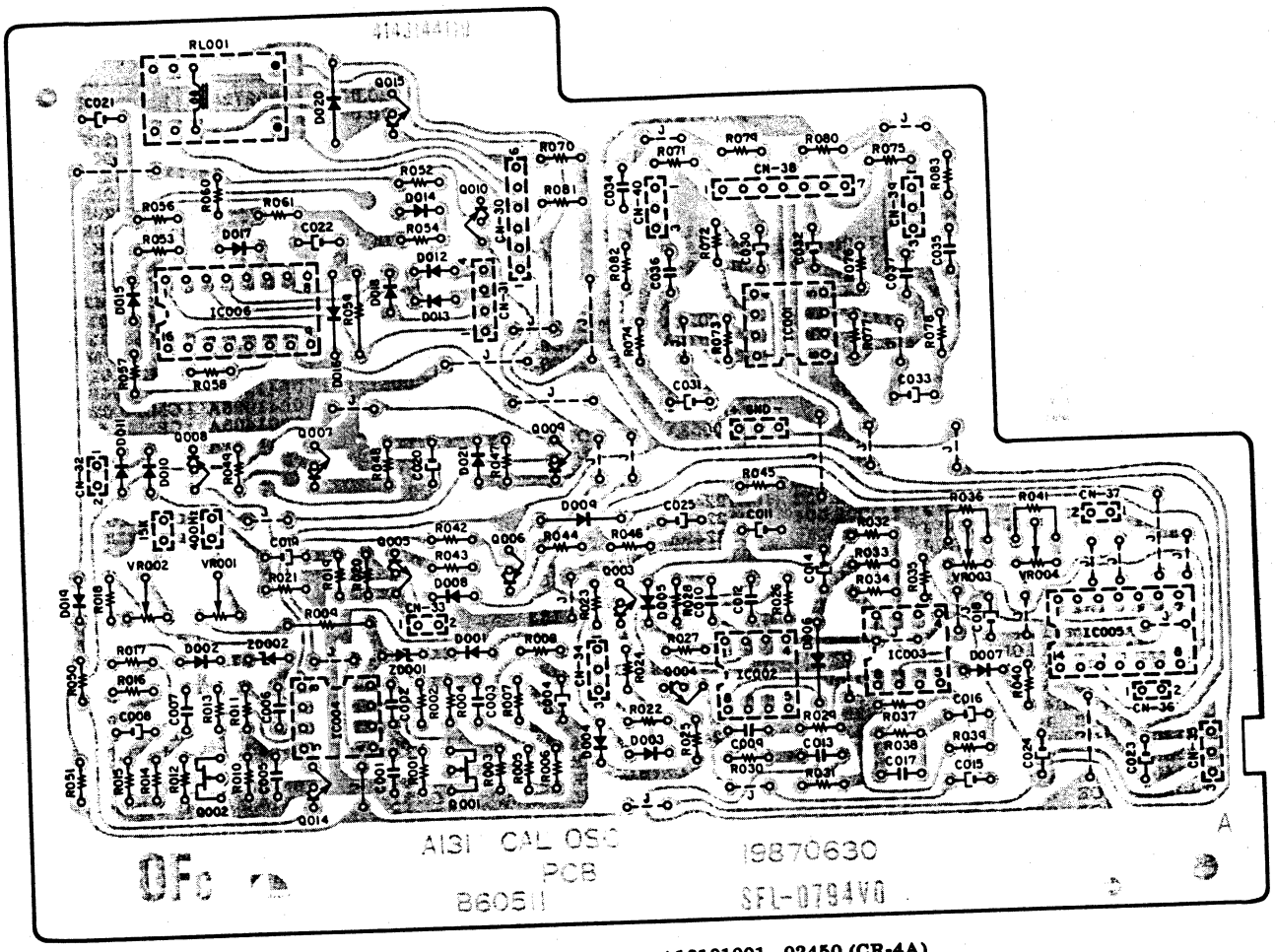


Fig. 8.10.2 Serial Nos.: A13101001 - 02450 (CR-4A)
A13150001 - 53800 (CR-4/4E/40)

8.11. Flywheel Holder Ass'y

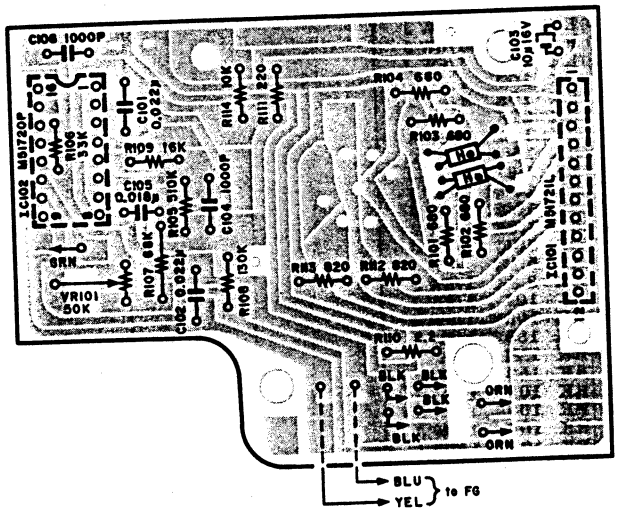


Fig. 8.11

Schematic Ref. No.	Part No.	Description
8.11. Flywheel Holder Ass'y		
	CA80444A	Flywheel Holder Ass'y
IC101	0C81951A	IC M51721L
IC102	0C81952A	IC M51720P
VR101	0B32109A	Semi VR 50K
R101,102 103,104	0B23154A	RK 680 1/4W J
R105	0B23155A	RK 510K 1/4W J
R106	0B23156A	RK 33K 1/4W J
R107	0B22737A	RM 68K 1/8W J
R108	0B23161A	RK 130K 1/4W J
R109	0B23157A	RK 16K 1/4W J
R110	0B23158A	RK 2.2 1/4W J
R111	0B23164A	RK 220 1/4W J
R112,113	0B23159A	RK 820 1/4W J
R114	0B23160A	RK 10K 1/4W J
C101,102	0B23163A	CC 0.022µ 25V (N)
C103	0B01412A	CE 10µ 16V
C104,106	0B23162A	CC 1000P 50V K
C105	0B41748A	C Polystyrene 0.018µ 50V J
	0B11271A	Hall Sensor E5231-1

Schematic Ref. No.	Part No.	Description
8.10.2. Cal. Osc. P.C.B. Ass'y		
	BA07008B	Cal. Osc. P.C.B. Ass'y Serial Nos: A13101001 - 02450 (CR-4A) A13150001 - 53800 (CR-4/4E/40)
	0B60511A	Cal. Osc. P.C.B.
IC001,002	0B06124B	IC NJM4558D
IC003,004	0B06124B	IC NJM4558D
IC005	0B06144A	IC μPD4066BC
IC006	0B11066A	IC LC4049B
Q001,002	0B10022A	FET 2SK246 (GR)
Q003,004	0B01872A	TR 2SC945L (P,Q)
Q005	0B01872A	TR 2SC945L (P,Q)
Q006	0B10058A	TR DTA114ES
Q007	0B01872A	TR 2SC945L (P,Q)
Q008	0B06013A	TR 2SA733 (P,Q)
Q009,010	0B10053A	TR DTA144ES
Q014	0B01872A	TR 2SC945L (P,Q)
Q015	0B10023A	TR 2SC2002 (K)
ZD001,002	0B12442A	ZD 7.5V UTZJ7.5B
D001,002	0B12249A	SiD 1SS133
D003,004	0B12249A	SiD 1SS133
D005	0B12249A	SiD 1SS133
D006	0B06181A	SiD 1SS53
D007,008	0B12249A	SiD 1SS133
D009	0B06181A	SiD 1SS53
D010,011	0B12249A	SiD 1SS133
D012,013	0B12249A	SiD 1SS133
D014,015	0B12249A	SiD 1SS133
D016	0B06181A	SiD 1SS53
D017,018	0B12249A	SiD 1SS133
D019	0B12249A	SiD 1SS133
D020	0B06181A	SiD 1SS53
D021	0B12249A	SiD 1SS133
VR001,002	0B32130A	Semi VR 100KB
VR003,004	0B32127A	Semi VR 10KB
R001	0B09676A	RK 910 1/6W J
R002	0B09711A	RK 27K 1/6W J
R003	0B09733A	RK 220K 1/6W J
R004	0B09719A	RK 56K 1/6W J
R005	0B09749A	RK 1M 1/6W J
R006	0B09699A	RK 8.2K 1/6W J
R007	0B09741A	RK 470K 1/6W J
R008	0B09701A	RK 10K 1/6W J
R009	0B05626A	RK 150K 1/4W J
R010	0B09676A	RK 910 1/6W J
R011	0B09709A	RK 22K 1/6W J
R012	0B09733A	RK 220K 1/6W J
R013	0B09719A	RK 56K 1/6W J
R014	0B09749A	RK 1M 1/6W J
R015	0B09699A	RK 8.2K 1/6W J
R016	0B09741A	RK 470K 1/6W J
R017	0B09701A	RK 10K 1/6W J
R018	0B09729A	RK 150K 1/6W J
R019	0B09685A	RK 2.2K 1/6W J
R020	0B09709A	RK 22K 1/6W J
R021	0B09653A	RK 100 1/6W J
R022,023	0B09701A	RK 10K 1/6W J
R024,025	0B09709A	RK 22K 1/6W J
R026	0B09725A	RK 100K 1/6W J
R027	0B09729A	RK 150K 1/6W J
R028	0B09679A	RK 1.2K 1/6W J
R029	0B09725A	RK 100K 1/6W J
R030	0B09729A	RK 150K 1/6W J
R031	0B09679A	RK 1.2K 1/6W J
R032,033	0B09701A	RK 10K 1/6W J
R034	0B09694A	RK 5.1K 1/6W J
R035	0B09689A	RK 3.3K 1/6W J
R036	0B09701A	RK 10K 1/6W J
R037	0B09725A	RK 100K 1/6W J
R038	0B09729A	RK 150K 1/6W J
R039	0B09679A	RK 1.2K 1/6W J
R040	0B09657A	RK 150 1/6W J
R041	0B09701A	RK 10K 1/6W J
R042	0B09725A	RK 100K 1/6W J
R043,044	0B09701A	RK 10K 1/6W J
R045,046	0B09725A	RK 100K 1/6W J
R047,048	0B09709A	RK 22K 1/6W J
R049	0B09677A	RK 1K 1/6W J
R050	0B09701A	RK 10K 1/6W J
R051	0B09725A	RK 100K 1/6W J
R052	0B09741A	RK 470K 1/6W J
R053	0B09669A	RK 470 1/6W J
R054	0B09741A	RK 470K 1/6W J
R056,057	0B09725A	RK 100K 1/6W J
R058	0B09749A	RK 1M 1/6W J
R059	0B05676A	RK 390K 1/4W J
R060,061	0B09725A	RK 100K 1/6W J
R070,071	0B09701A	RK 10K 1/6W J
R072	0B09733A	RK 220K 1/6W J
R073	0B09725A	RK 100K 1/6W J
R074	0B09723A	RK 82K 1/6W J
R075	0B09701A	RK 10K 1/6W J
R076	0B09733A	RK 220K 1/6W J
R077	0B09725A	RK 100K 1/6W J
R078	0B09723A	RK 82K 1/6W J
R079,080	0B09701A	RK 10K 1/6W J
R081	0B09677A	RK 1K 1/6W J
R082,083	0B09749A	RK 1M 1/6W J
C001	0B41306A	CMM 0.47μ 50V J
C002	0B41288A	CML 0.015μ 50V J
C003	0B41098A	CML 0.022μ 50V J
C004	0B01405A	CE 1μ 50V
C005	0B09856A	CML 0.01μ 50V J
C006	0B41215A	CPP 390P 100V J
C007	0B41098A	CML 0.022μ 50V J
C008	0B01405A	CE 1μ 50V
C009	0B41221A	CPP 680P 100V J
C010	0B41287A	CML 0.012μ 50V J
C011	0B01862A	CE 22μ 16V
C012	0B41221A	CPP 680P 100V J
C013	0B41287A	CML 0.012μ 50V J
C014	0B01862A	CE 22μ 16V
C015,016	0B01405A	CE 1μ 50V
C017	0B41221A	CPP 680P 100V J
C018,019	0B01412A	CE 10μ 16V
C020	0B40076A	CE 33μ 16V
C021	0B01412A	CE 10μ 16V
C022	0B01405A	CE 1μ 50V
C023,024	0B01397A	CE 1000μ 16V
C025	0B01412A	CE 10μ 16V
C030,031	0B09814A	CE 1μ 50V (LN)
C032,033	0B09814A	CE 1μ 50V (LN)
C034,035	0B41390A	CPP 150P 50V J
C036,037	0B40473A	CE 10μ 16V (BP)
RL001	0B90301A	Relay 12V MR52-12S
CN30	0B81638A	6P-T Post
CN31	0B81636A	4P-T Post
CN32	0B81637A	2P-T Post
CN33	0B83138A	2P Connector
CN34	0B83139A	3P Connector
CN35	0B83140A	3P Connector
CN36,37	0B81634A	2P-T Post
CN38	0B81639A	7P-T Post
CN39	0B83144A	3P Connector
CN40	0B83145A	3P Connector
	0B81773A	Receptacle 2P Female (2)
	0B81774A	Receptacle 2P Male (2)

8.12. Control P.C.B. Ass'y

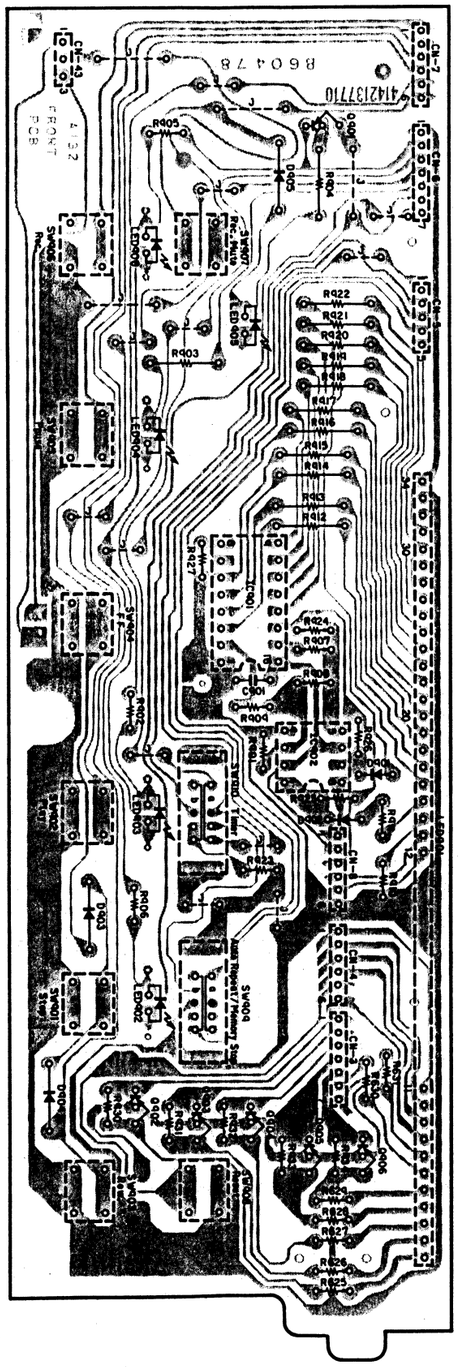


Fig. 8.12

Schematic Ref. No.	Part No.	Description
8.12. Control P.C.B. Ass'y		
	BA07042A	Control P.C.B. Ass'y
	0B60478A	Control P.C.B.
IC901	0B06369A	IC TA7612P
IC902	0B11372A	IC NJM2403D
Q901	0B10003A	TR 2SA1345
Q902,903	0B10029A	TR 2SA933S
Q904,905	0B10029A	TR 2SA933S
Q906	0B10029A	TR 2SA933S
LED901	0B12587A	Display Unit SL-7663-40
LED902, 903	0B12578A	LED SLR-34DC4F Green
LED904	0B12578A	LED SLR-34DC4F Green
LED905	0B12577A	LED SLR-34DC4F
LED906, 907	0B12579A	LED SLR-320DC4F
D901,902	0B06398A	SiD 1SS176
D903,904	0B12584A	SiD 1N4148
D905	0B12584A	SiD 1N4148
R625,626	0B09641A	RK 33 1/6W J
R627,628	0B09641A	RK 33 1/6W J
R629,630	0B09641A	RK 33 1/6W J
R631	0B09641A	RK 33 1/6W J
R901	0B09661A	RK 220 1/6W J
R902	0B09657A	RK 150 1/6W J
R903	0B05795A	RK 150 1/4W J
R904	0B05645A	RK 270 1/4W J
R905	0B09659A	RK 180 1/6W J
R906	0B09661A	RK 220 1/6W J
R907,908	0B09677A	RK 1K 1/6W J
R909	0B09677A	RK 1K 1/6W J
R910	0B09659A	RK 180 1/6W J
R911	0B09655A	RK 120 1/6W J
R912,913	0B01679A	RK 100 1/4W J
R914,915	0B01679A	RK 100 1/4W J
R916,917	0B01679A	RK 100 1/4W J
R918,919	0B01679A	RK 100 1/4W J
R920,921	0B01679A	RK 100 1/4W J
R922	0B09797A	RK 120 1/4W J
R923	0B09687A	RK 2.7K 1/6W J
R924	0B09694A	RK 5.1K 1/6W J
R925,926	0B09701A	RK 10K 1/6W J
R927	0B09701A	RK 10K 1/6W J
R930,931	0B09701A	RK 10K 1/6W J
R932,933	0B09701A	RK 10K 1/6W J
R934	0B09701A	RK 10K 1/6W J
C901	0B09281A	CC 150P 50V K
CN3	0B83123A	7P Connector
CN4	0B83128A	6P Connector
CN5	0B83124A	5P Connector
CN6	0B83127A	7P Connector
CN7	0B83126A	6P Connector
CN8	0B83263A	6P Connector
CN43	0B83148A	3P Connector
SW901,902	0B70043A	Tact Switch SKHHPM
SW903,904	0B70043A	Tact Switch SKHHPM
SW905,906	0B70043A	Tact Switch SKHHPM
SW907,908	0B70043A	Tact Switch SKHHPM
SW909,910	0B07437A	Slide Switch ESD 14150
	0J05416A	LED Reflector (4)

8.13. Main P.C.B. Ass'y

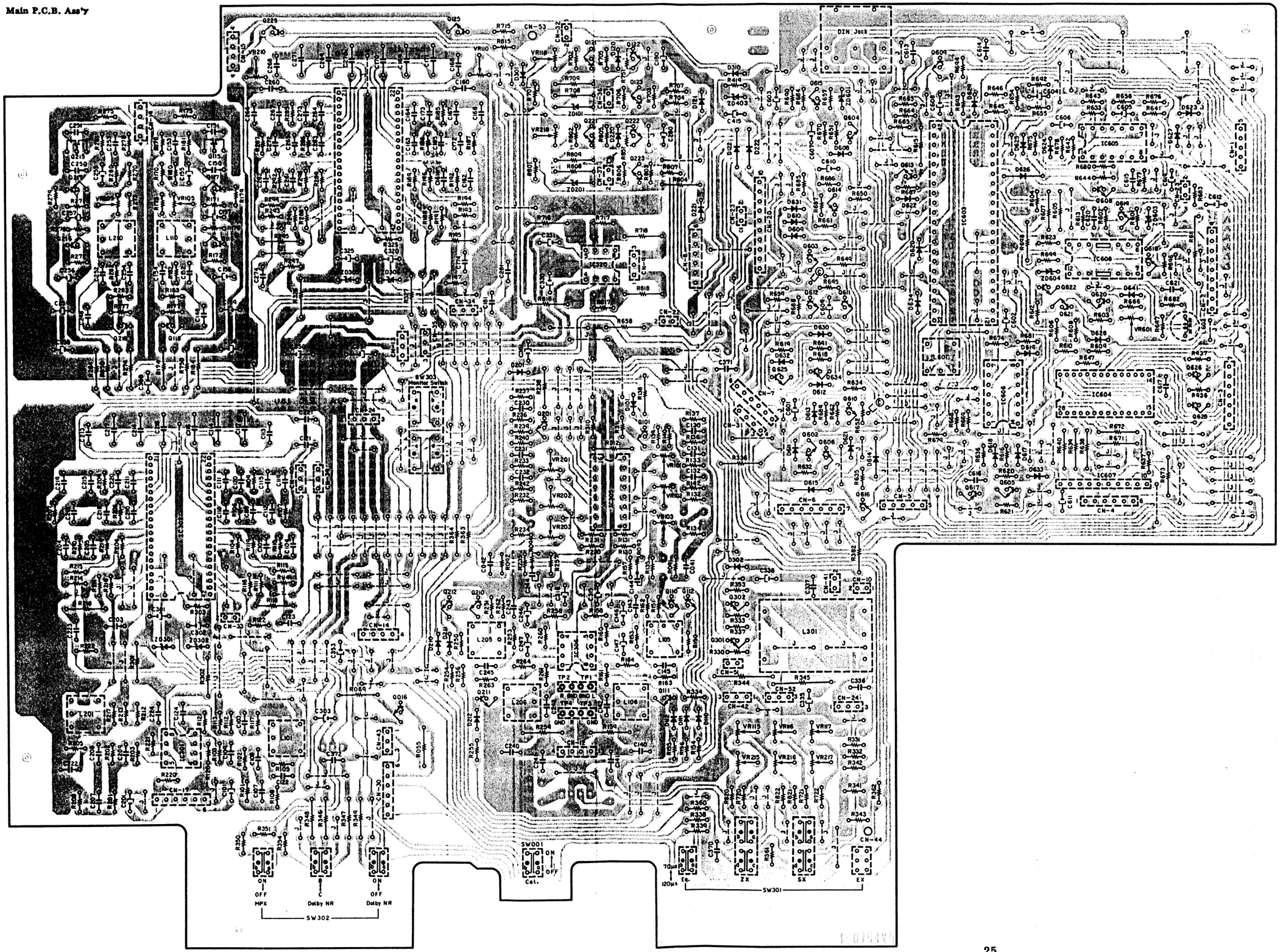


Fig. 8.13.1 Serial No.: A13102451 - (CR-4A)
A13153801 - (CR-4/4E/40)

Schematic Ref. No.	Part No.	Description
8.13.1. Main P.C.B. Ass'y		
	BA07188A	Main P.C.B. Ass'y Serial No.: A13102451 - (CR-4A) A13153801 - (CR-4/4E/40)
		— PB Eq. Amp. —
Q115	0B10213A	FET 2SK371 (GR)
Q116	0B06142A	TR 2SC2240 (BL)
Q117	0B10050A	TR 2SA970 (BL)
Q118	0B10033A	TR 2SC1740S
Q215	0B10213A	FET 2SK371 (GR)
Q216	0B06142A	TR 2SC2240 (BL)
Q217	0B10050A	TR 2SA970 (BL)
Q218	0B10033A	TR 2SC1740S
L110	0B51261A	Trap Unit
L210	0B51261A	Trap Unit
VR105	0B32124A	Semi VR 1K
VR205	0B32124A	Semi VR 1K
R170	0B09661A	RK 220 1/6W J
R171	0B09673A	RK 680 1/6W J
R172	0B09697A	RK 6.8K 1/6W J
R173	0B09709A	RK 22K 1/6W J
R174	0B01888A	RK 10K 1/4W J
R175	0B09725A	RK 100K 1/6W J
R176	0B09721A	RK 68K 1/6W J
R177	0B09749A	RK 1M 1/6W J
R178	0B22085A	RM 54.9 1/6W F
R179	0B22274A	RM 2.61K 1/6W F
R180	0B22318A	RM 6.04K 1/6W F
R181	0B22466A	RM 121K 1/6W F
R182	0B22327A	RM 7.15K 1/6W F
R183	0B22335A	RM 8.45K 1/6W F
R184	0B24156A	RF 62 1/4W J
R270	0B09661A	RK 220 1/6W J
R271	0B09673A	RK 680 1/6W J
R272	0B09697A	RK 6.8K 1/6W J
R273	0B09709A	RK 22K 1/6W J
R274	0B01888A	RK 10K 1/4W J
R275	0B09725A	RK 100K 1/6W J
R276	0B09721A	RK 68K 1/6W J
R277	0B09749A	RK 1M 1/6W J
R278	0B22085A	RM 54.9 1/6W F
R279	0B22274A	RM 2.61K 1/6W F
R280	0B22318A	RM 6.04K 1/6W F
R281	0B22466A	RM 121K 1/6W F
R282	0B22327A	RM 7.15K 1/6W F
R283	0B22335A	RM 8.45K 1/6W F
R284	0B24156A	RF 62 1/4W J
R750	0B24156A	RF 62 1/4W J
R850	0B24156A	RF 62 1/4W J
C148	0B41402A	CPP 470P 50V J
C150	0B09812A	CC 2P 50V C
C151	0B41390A	CPP 150P 50V J
C152	0B41239A	CPP 3900P 100V J
C153	0B09405A	CPP 0.022μ 100V J
C154	0B41245A	CPP 6800P 100V J
C155	0B09833A	CE 4.7μ 25V (LN)
C156	0B05899A	CE 220μ 10V
C157	0B05841A	CE 330μ 10V
C158,159	0B40081A	CE 470μ 16V
C248	0B41402A	CPP 470P 50V J
C250	0B09812A	CC 2P 50V C
C251	0B41390A	CPP 150P 50V J
C252	0B41239A	CPP 3900P 100V J
C253	0B09405A	CPP 0.022μ 100V J
C254	0B41245A	CPP 6800P 100V J
C255	0B09833A	CE 4.7μ 25V (LN)
C256	0B05899A	CE 220μ 10V
C257	0B05841A	CE 330μ 10V
C258,259	0B40081A	CE 470μ 16V
C360	0B09147A	CE 3.3μ 50V (LN)
CN19	0B81761A	4P-T Post
		— Decoder —
IC315	0B11363A	IC CX20188
ZD305,306	0B12168A	ZD 10V RD10JS-T1B2
VR110	0B32125A	Semi VR 2K
VR210	0B32125A	Semi VR 2K
R185	0B09673A	RK 680 1/6W J
R186	0B09698A	RK 7.5K 1/6W J
R187	0B09700A	RK 9.1K 1/6W J
R188	0B09725A	RK 100K 1/6W J
R189	0B09749A	RK 1M 1/6W J
R191	0B22229A	RM 1.00K 1/6W F
R192	0B22201A	RM 562 1/6W F
R193	0B22285A	RM 3.24K 1/6W F
R194	0B22294A	RM 3.83K 1/6W F
R195	0B09547A	RM 2.21K 1/4W F
R196	0B22380A	RM 22.1K 1/6W F
R197	0B09717A	RK 47K 1/6W J
R285	0B09673A	RK 680 1/6W J
R286	0B09698A	RK 7.5K 1/6W J
R287	0B09700A	RK 9.1K 1/6W J
R288	0B09725A	RK 100K 1/6W J
R289	0B09749A	RK 1M 1/6W J
R291	0B22229A	RM 1.00K 1/6W F
R292	0B22201A	RM 562 1/6W F
R293	0B22285A	RM 3.24K 1/6W F
R294	0B22294A	RM 3.83K 1/6W F
R295	0B09547A	RM 2.21K 1/4W F
R296	0B22380A	RM 22.1K 1/6W F
R297	0B09717A	RK 47K 1/6W J
R325	0B22469A	RM 130K 1/6W F
R326,327	0B24156A	RF 62 1/4W J
C160	0B41386A	CPP 100P 50V J
C161,162	0B41133A	CPP 2200P 100V G
C163	0B41139A	CPP 3900P 100V G
C164	0B41143A	CPP 5600P 100V G
C165,166	0B09187A	CE 1μ 50V (BP)
C167	0B05813A	CML 0.056μ 50V J
C168	0B05682A	CML 0.068μ 50V J
C169	0B41300A	CMM 0.15μ 50V J
C170	0B41302A	CMM 0.22μ 50V J
C171	0B09876A	CMM 0.47μ 50V J
C172	0B05557A	CML 0.015μ 50V J
C173	0B05681A	CML 0.01μ 50V J
C174	0B40473A	CE 10μ 16V (BP)
C260	0B41386A	CPP 100P 50V J
C261,262	0B41133A	CPP 2200P 100V G
C263	0B41139A	CPP 3900P 100V G
C264	0B41143A	CPP 5600P 100V G
C265,266	0B09187A	CE 1μ 50V (BP)
C267	0B05813A	CML 0.056μ 50V J
C268	0B05682A	CML 0.068μ 50V J
C269	0B41300A	CMM 0.15μ 50V J
C270	0B41302A	CMM 0.22μ 50V J
C271	0B09876A	CMM 0.47μ 50V J
C272	0B05557A	CML 0.015μ 50V J
C273	0B05681A	CML 0.01μ 50V J
C274	0B40473A	CE 10μ 16V (BP)
C320	0B01391A	CE 220μ 25V
C325	0B01391A	CE 220μ 25V
CN34	0B81635A	3P-T Post
		— Encoder —
IC301	0B11005A	IC NJM072DE
IC302	0B11363A	IC CX20188
L101	0B51262A	L-C Block BLU (MPX)
L201	0B51262A	L-C Block BLU (MPX)
ZD301,302	0B12168A	ZD 10V RD10JS-T1B2
R101,102	0B09717A	RK 47K 1/6W J
R103	0B09709A	RK 22K 1/6W J
R104	0B09749A	RK 1M 1/6W J
R105	0B09725A	RK 100K 1/6W J
R106	0B09698A	RK 7.5K 1/6W J
R107	0B09700A	RK 9.1K 1/6W J
R108	0B09749A	RK 1M 1/6W J
R109	0B09673A	RK 680 1/6W J
R110	0B22201A	RM 562 1/6W F
R111	0B22229A	RM 1.00K 1/6W F
R112,113	0B22275A	RM 2.67K 1/6W F
R114	0B22285A	RM 3.24K 1/6W F
R115	0B22294A	RM 3.83K 1/6W F
R116,117	0B22315A	RM 5.62K 1/6W F
R118	0B09523A	RM 13.7K 1/4W F
R119	0B22380A	RM 22.1K 1/6W F
R120,121	0B09677A	RK 1K 1/6W J
R122	0B09733A	RK 220K 1/6W J
R201,202	0B09717A	RK 47K 1/6W J
R203	0B09709A	RK 22K 1/6W J
R204	0B09749A	RK 1M 1/6W J
R205	0B09725A	RK 100K 1/6W J
R206	0B09698A	RK 7.5K 1/6W J
R207	0B09700A	RK 9.1K 1/6W J
R208	0B09749A	RK 1M 1/6W J
R209	0B09673A	RK 680 1/6W J
R210	0B22201A	RM 562 1/6W F
R211	0B22229A	RM 1.00K 1/6W F
R212,213	0B22275A	RM 2.67K 1/6W F
R214	0B22285A	RM 3.24K 1/6W F
R215	0B22294A	RM 3.83K 1/6W F
R216,217	0B22315A	RM 5.62K 1/6W F
R218	0B09523A	RM 13.7K 1/4W F
R219	0B22380A	RM 22.1K 1/6W F
R220,221	0B09677A	RK 1K 1/6W J
R222	0B09733A	RK 220K 1/6W J
R301,302	0B24156A	RF 62 1/4W J
R303	0B22469A	RM 130K 1/6W F
C101	0B09148A	CE 10μ 25V (LN)
C103	0B09404A	CPP 1000P 100V J
C104,105	0B41133A	CPP 2200P 100V G
C107,108	0B09792A	CC 33P 50V J
C109	0B09393A	CC 68P 50V J
C110	0B41139A	CPP 3900P 100V G
C111	0B41143A	CPP 5600P 100V G
C112	0B05557A	CML 0.015μ 50V J
C113	0B05682A	CML 0.068μ 50V J
C114	0B41300A	CMM 0.15μ 50V J
C115	0B05813A	CML 0.056μ 50V J
C116	0B41302A	CMM 0.22μ 50V J
C117	0B09876A	CMM 0.47μ 50V J
C118,119	0B09187A	CE 1μ 50V (BP)
C120	0B05681A	CML 0.01μ 50V J
C121	0B40473A	CE 10μ 16V (BP)
C122	0B41388A	CPP 120P 50V J
C123,124	0B40473A	CE 10μ 16V (BP)
C201	0B09148A	CE 10μ 25V (LN)
C203	0B09404A	CPP 1000P 100V J
C204,205	0B41133A	CPP 2200P 100V G
C207,208	0B09792A	CC 33P 50V J
C209	0B09393A	CC 68P 50V J
C210	0B41139A	CPP 3900P 100V G
C211	0B41143A	CPP 5600P 100V G
C212	0B05557A	CML 0.015μ 50V J
C213	0B05682A	CML 0.068μ 50V J
C214	0B41300A	CMM 0.15μ 50V J
C215	0B05813A	CML 0.056μ 50V J
C216	0B41302A	CMM 0.22μ 50V J
C217	0B09876A	CMM 0.47μ 50V J
C218,219	0B09187A	CE 1μ 50V (BP)
C220	0B05681A	CML 0.01μ 50V J
C221	0B40473A	CE 10μ 16V (BP)
C222	0B41388A	CPP 120P 50V J
C223,224	0B40473A	CE 10μ 16V (BP)
C301,302	0B01391A	CE 220μ 25V
C303	0B01674A	CE 10μ 25V
CN33	0B81634A	2P-T Post
CN39,40	0B81635A	3P-T Post
		— Rec. Level —
IC305	0B11027A	IC TC9145P
Q101	0B10033A	TR 2SC1740S
Q201	0B10033A	TR 2SC1740S
D101	0B06398A	SiD 1SS176
D201	0B06398A	SiD 1SS176
VR101,102	0B32127A	Semi VR 10K
VR103	0B32128A	Semi VR 20K
VR201,202	0B32127A	Semi VR 10K
VR203	0B32128A	Semi VR 20K
R091,092	0B09711A	RK 27K 1/6W J
R130	0B09689A	RK 3.3K 1/6W J
R131	0B09693A	RK 4.7K 1/6W J
R132	0B09697A	RK 6.8K 1/6W J
R133,134	0B09701A	RK 10K 1/6W J
R135	0B09701A	RK 10K 1/6W J
R136	0B09705A	RK 15K 1/6W J
R137	0B09711A	RK 27K 1/6W J
R138	0B05615A	RK 22K 1/4W J
R139	0B09749A	RK 1M 1/6W J
R140	0B22326A	RM 6.98K 1/6W F
R142	0B09711A	RK 27K 1/6W J
R230	0B09689A	RK 3.3K 1/6W J
R231	0B09693A	RK 4.7K 1/6W J
R232	0B09697A	RK 6.8K 1/6W J
R233,234	0B09701A	RK 10K 1/6W J
R235	0B09701A	RK 10K 1/6W J
R236	0B09705A	RK 15K 1/6W J
R237	0B09711A	RK 27K 1/6W J
R238	0B05615A	RK 22K 1/4W J
R239	0B09749A	RK 1M 1/6W J
R240	0B22326A	RM 6.98K 1/6W F
R242	0B09711A	RK 27K 1/6W J
R310,311	0B09693A	RK 4.7K 1/6W J
R312	0B01888A	RK 10K 1/4W J
C041,042	0B05659A	CML 5600P 50V J
C130	0B09322A	CPP 330P 100V J
C131	0B09591A	CPP 0.01μ 100V J
C132	0B05659A	CML 5600P 50V J
C230	0B09322A	CPP 330P 100V J
C231	0B09591A	CPP 0.01μ 100V J
C232	0B05659A	CML 5600P 50V J
C361	0B01863A	CE 3.3μ 50V
IC306	0B06387A	IC NJM2043DD
Q110,111	0B06299A	TR 2SC2878
Q112	0B10033A	TR 2SC1740S
Q210,211	0B06299A	TR 2SC2878
Q212	0B10033A	TR 2SC1740S
D110,111	0B06398A	SiD 1SS176
D112	0B06398A	SiD 1SS176
D210,211	0B06398A	SiD 1SS176
D212	0B06398A	SiD 1SS176
L105	0B51260A	L-C Block 42-5025
L106	0B51258A	Trap Coil 1.05mH
L205	0B51260A	L-C Block 42-5025
L206	0B51258A	Trap Coil 1.05mH
R093,094	0B09723A	RK 82K 1/6W J
R150	0B09681A	RK 1.5K 1/6W J
R151	0B09675A	RK 820 1/6W J
R153	0B09703A	RK 12K 1/6W J
R154,155	0B09701A	RK 10K 1/6W J
R156	0B09709A	RK 22K 1/6W J
R157	0B09713A	RK 33K 1/6W J
R158	0B09733A	RK 220K 1/6W J
R159	0B05936A	RK 10 1/4W J
R160	0B22229A	RM 1.00K 1/6W F
R161	0B22248A	RM 1.54K 1/6W F
R162	0B22296A	RM 3.92K 1/6W F
R163	0B22431A	RM 59.0K 1/6W F
R164	0B09733A	RK 220K 1/6W J
R250	0B09681A	RK 1.5K 1/6W J
R251	0B09675A	RK 820 1/6W J
R253	0B09703A	RK 12K 1/6W J
R254,255	0B09701A	RK 10K 1/6W J
R256	0B09709A	RK 22K 1/6W J
R257	0B09713A	RK 33K 1/6W J
R258	0B09733A	RK 220K 1/6W J
R259	0B05936A	RK 10 1/4W J
R260	0B22229A	RM 1.00K 1/6W F
R261	0B22248A	RM 1.54K 1/6W F
R262	0B22296A	RM 3.92K 1/6W F
R263	0B22431A	RM 59.0K 1/6W F
R264	0B09733A	RK 220K 1/6W J
C140	0B09322A	CPP 330P 100V J
C141	0B09270A	CPP 470P 100V J
C142	0B09834A	CPP 2200P 100V J
C143	0B09993A	CML 820P 50V J
C144	0B09828A	CPP 8200P 100V J
C145	0B05685A	CML 0.082μ 50V J
C146	0B09814A	CE 1μ 50V (LN)
C147	0B40154A	CE 47μ 16V (LN)
C240	0B09322A	CPP 330P 100V J
C241	0B09270A	CPP 470P 100V J
C242	0B09834A	CPP 2200P 100V J
C243	0B09993A	CML 820P 50V J
C244	0B09828A	CPP 8200P 100V J
C245	0B05685A	CML 0.082μ 50V J
C246	0B09814A	CE 1μ 50V (LN)
C247	0B40154A	CE 47μ 16V (LN)
C315,316	0B40154A	CE 47μ 16V (LN)
CN12	0B81761A	4P-T Post
TP1,2	0B81761A	4P-T Post
TP3,4	0B81761A	4P-T Post
		— Meter Amp. —
Q121	0B06142A	TR 2SC2240 (BL)
Q122,123	0B10033A	TR 2SC1740S
Q221	0B06142A	TR 2SC2240 (BL)
Q222,223	0B10033A	TR 2SC1740S
ZD101	0B06230A	ZD 5.1V RD5.1EB2
ZD201	0B06230A	ZD 5.1V RD5.1EB2
D120,121	0B06398A	SiD 1SS176
D122	0B12584A	SiD 1N4148
D220,221	0B06398A	SiD 1SS176
D222	0B12584A	SiD 1N4148
D301	0B06398A	SiD 1SS176
VR118	0B32130A	Semi VR 100K
VR218	0B32130A	Semi VR 100K
R701	0B09709A	RK 22K 1/6W J
R702	0B09705A	RK 15K 1/6W J
R703,704	0B09719A	RK 56K 1/6W J
R705,706	0B09725A	RK 100K 1/6W J
R707	0B09725A	RK 100K 1/6W J
R708	0B05692A	RK 68K 1/4W J
R709	0B05776A	RK 1M 1/4W J
R751	0B09749A	RK 1M 1/6W J
R801	0B09709A	RK 22K 1/6W J
R802	0B09705A	RK 15K 1/6W J
R803	0B09719A	RK 56K 1/6W J
R804	0B05508A	RK 56K 1/4W J
R805,806	0B09725A	RK 100K 1/6W J
R807	0B09725A	RK 100K 1/6W J
R808	0B05692A	RK 68K 1/4W J
R809	0B05776A	RK 1M 1/4W J
R851	0B09749A	RK 1M 1/6W J
C180	0B09148A	CE 10μ 25V (LN)
C181	0B01780A	CML 0.1μ 50V J
C280	0B09148A	CE 10μ 25V (LN)
C281	0B01780A	CML 0.1μ 50V J
CN8	0B81763A	6P-T Post
CN32	0B83137A	2P Connector
CN36	0B83141A	2P Connector
CN37	0B83142A	2P Connector
		— Headphone Amp. —
IC320	0B06370A	IC NJM4556D
Q125	0B06299A	TR 2SC2878
Q225	0B06299A	TR 2SC2878
D310	0B06398A	SiD 1SS176
R715	0B09693A	RK 4.7K 1/6W J
R716	0B01889A	RK 100K 1/4W J
R717	0B09725A	RK 100K 1/6W J
R718	0B24155A	RF 12 1/4W J
R815	0B09693A	RK 4.7K 1/6W J
R816	0B01889A	RK 100K 1/4W J
R817	0B09725A	RK 100K 1/6W J
R818	0B24155A	RF 12 1/4W J
C330,331	0B01403A	CE 47μ 16V
		— Bias Osc. —
Q301	0B06202A	TR 2SA562TM (Y)
Q302	0B10029A	TR 2SA933S
D302	0B06398A	SiD 1SS176
L301	0B51256A	Bias Osc. B01-JF
VR115	0B32127A	Semi VR 10K
VR116	0B32128A	Semi VR 20K
VR117	0B32129A	Semi VR 50K
VR215	0B32127A	Semi VR 10K
VR216	0B32128A	Semi VR 20K
VR217	0B32129A	Semi VR 50K
R330	0B09669A	RK 470 1/6W J
R331,332	0B09693A	RK 4.7K 1/6W J
R333,334	0B09701A	RK 10K 1/6W J
R336	0B05622A	RK 2.2K 1/4W J
R337	0B09721A	RK 68K 1/6W J
R338,339	0B09725A	RK 100K 1/6W J
R341,342	0B09733A	RK 220K 1/6W J
R343	0B09737A	RK 220K 1/6W J
R344	0B24158A	RF 10 1W J
R345	0B24159A	RF 22 1W J
R353	0B09717A	RK 47K 1/6W J
R360	0B09711A	RK 27K 1/6W J
R361,362	0B09725A	RK 100K 1/6W J
R720	0B09653A	RK 100 1/6W J
R721	0B09697A	RK 6.8K 1/6W J
R722	0B09705A	RK 15K 1/6W J
R820	0B09653A	RK 100 1/6W J
R821	0B09697A	RK 6.8K 1/6W J
R822	0B09705A	RK 15K 1/6W J
C335	0B01403A	CE 47μ 16V
C336	0B41255A	CPP 0.018μ 100V J
C337	0B05550A	CML 1000P 50V J
C338	0B09148A	CE 10μ 25V (LN)
C370,371	0B01780A	CML 0.1μ 50V J
CN10	0B81759A	2P-T Post
CN41	0B81759A	2P-T Post
CN42	0B81635A	3P-T Post
CN51	0B81773A	Receptacle 2P
CN51	0B81774A	Header 2P
CN52	0B81773A	Receptacle 2P
CN52	0B81775A	Header 3P
		— Switch —
Q016	0B10062A	TR DTC144ES R1,R2=47K
R055	0B01857A	RK 1K 1/4W J
R069	0B01888A	RK 10K 1/4W J
R346,347	0B05794A	RK 680 1/4W J
R348,349	0B01888A	RK 10K 1/4W J
R350,351	0B09709A	RK 22K 1/6W J
R354	0B09701A	RK 10K 1/6W J
R363,364	0B01888A	RK 10K 1/4W J
R382	0B05794A	RK 680 1/4W J
C350,351	0B40083A	CE 2200μ 16V
C353	0B01409A	CE 47μ 25V
C372	0B01780A	CML 0.1μ 50V J
SW001	0B70121A	Push Switch SPUJ19
SW301	0B70114A	Push Switch SPUJ42
SW302	0B70113A	Push Switch SPUJ32
SW303	0B70122A	Push Switch SPUL12
CN30	0B83135A	6P Connector
CN43	0B81635A	3P-T Post
CN44	0B81117A	1P Contact Pin
	0J05418B	P.C.B. Holder (1)
	0J05575A	Rivet 3x3.5 (2)
		— Logic —
IC603	0B11020A	IC TMP4315BP-1814
IC604	0B06368A	IC LM6416E-106
IC605	0B06317A	IC μPD4030BC
IC606	0B06214A	IC μPD4071BC
IC607	0B11369A	IC TA64
IC608	0B11368A	IC LB1649
Q602,603	0B10007A	TR 2SC3399
Q604	0B10007A	TR 2SC3399
Q605	0B06299A	TR 2SC2878
Q606	0B10003A	TR 2SA1345
Q608,609	0B10033A	TR 2SC1740S
Q610,611	0B10033A	TR 2SC1740S
Q612,613	0B10033A	TR 2SC1740S
Q614,615	0B10029A	TR 2SA933S
Q616,617	0B10029A	TR 2SA933S
Q618,619	0B06013A	TR 2SA733 (P,Q)
Q620,621	0B01872A	TR 2SC945L (P,Q)
Q622	0B01872A	TR 2SC945L (P,Q)
Q625	0B10033A	TR 2SC1740S
Q626	0B10029A	TR 2SA933S
Q628	0B10029A	TR 2SA933S
Q634	0B10097A	TR 2SA952 (K,L)
ZD403	0B12179A	ZD 15V RD15JS-T1B1
ZD601	0B12167A	ZD 10V RD10JS-T1B1
ZD603	0B12150A	ZD 5.6V RD5.6JS-T1B2
ZD604	0B12153A	ZD 6.2V RD6.2JS-T1B2
D608	0B06398A	SiD 1SS176
D609,610	0B06398A	SiD 1SS176
D611,612	0B06398A	SiD 1SS176
D613	0B06398A	SiD 1SS176
D614,615	0B12584A	SiD 1N4148
D617	0B06398A	SiD 1SS176
D618,619	0B06398A	SiD 1SS176
D620,621	0B06398A	SiD 1SS176
D622,623	0B06398A	SiD 1SS176
D624,625	0B06398A	SiD 1SS176
D626	0B12584A	SiD 1N4148
D627,628	0B06398A	SiD 1SS176
D629,630	0B06398A	SiD 1SS176
D631,632	0B06398A	SiD 1SS176
D633,634	0B06398A	SiD 1SS176
D641	0B06398A	SiD 1SS176
L601	0B51263A	L-C Block BLK
L602	0B24150A	Coil Resistor 5
VR601	0B32123A	Semi VR 500
R419	0B09669A	RK 470 1/6W J
R601,602	0B09677A	RK 1K 1/6W J
R603	0B09677A	RK 1K 1/6W J
R604	0B09717A	RK 47K 1/6W J
R605	0B05641A	RK 47K 1/4W J
R606	0B09717A	RK 47K 1/6W J
R607	0B05641A	RK 47K 1/4W J
R608,609	0B09717A	RK 47K 1/6W J
R610	0B09729A	RK 150K 1/6W J
R611	0B24160A	RF 15 2W J
R612	0B09677A	RK 1K 1/6W J
R613	0B09717A	RK 47K 1/6W J
R615	0B05641A	RK 47K 1/4W J
R616	0B09693A	RK 4.7K 1/6W J
R618,619	0B09701A	RK 10K 1/6W J
R620	0B09701A	RK 10K 1/6W J
R621	0B09693A	RK 4.7K 1/6W J
R623	0B09677A	RK 1K 1/6W J
R632	0B09701A	RK 10K 1/6W J
R633	0B09677A	RK 1K 1/6W J
R634,635	0B09693A	RK 4.7K 1/6W J
R636	0B09693A	RK 4.7K 1/6W J
R637	0B09671A	RK 560 1/6W J
R638,639	0B05575A	RK 560 1/4W J

Schematic Ref. No.	Part No.	Description
R194	0B22294A	RM 3.83K 1/6W F
R195	0B09547A	RM 2.21K 1/4W F
R196	0B22380A	RM 22.1K 1/6W F
R197	0B09717A	RK 47K 1/6W J
R285	0B09673A	RK 680 1/6W J
R286	0B09698A	RK 7.5K 1/6W J
R287	0B09700A	RK 9.1K 1/6W J
R288	0B09725A	RK 100K 1/6W J
R289	0B09749A	RK 1M 1/6W J
R291	0B22229A	RM 1.00K 1/6W F
R292	0B22201A	RM 562 1/6W F
R293	0B22285A	RM 3.24K 1/6W F
R294	0B22294A	RM 3.83K 1/6W F
R295	0B09547A	RM 2.21K 1/4W F
R296	0B22380A	RM 22.1K 1/6W F
R297	0B09717A	RK 47K 1/6W J
R325	0B22469A	RM 130K 1/6W F
R326,327	0B24156A	RF 62 1/4W J
C160	0B41386A	CPP 100P 50V J
C161,162	0B41133A	CPP 2200P 100V G
C163	0B41139A	CPP 3900P 100V G
C164	0B41143A	CPP 5600P 100V G
C165,166	0B09187A	CE 1μ 50V (BP)
C167	0B05813A	CML 0.056μ 50V J
C168	0B05682A	CML 0.068μ 50V J
C169	0B41300A	CMM 0.15μ 50V J
C170	0B41302A	CMM 0.22μ 50V J
C171	0B09876A	CMM 0.47μ 50V J
C172	0B05557A	CML 0.015μ 50V J
C173	0B05681A	CML 0.01μ 50V J
C174	0B40473A	CE 10μ 16V (BP)
C260	0B41386A	CPP 100P 50V J
C261,262	0B41133A	CPP 2200P 100V G
C263	0B41139A	CPP 3900P 100V G
C264	0B41143A	CPP 5600P 100V G
C265,266	0B09187A	CE 1μ 50V (BP)
C267	0B05813A	CML 0.056μ 50V J
C268	0B05682A	CML 0.068μ 50V J
C269	0B41300A	CMM 0.15μ 50V J
C270	0B41302A	CMM 0.22μ 50V J
C271	0B09876A	CMM 0.47μ 50V J
C272	0B05557A	CML 0.015μ 50V J
C273	0B05681A	CML 0.01μ 50V J
C274	0B40473A	CE 10μ 16V (BP)
C320	0B01391A	CE 220μ 25V
C325	0B01391A	CE 220μ 25V
CN34	0B81635A	3P-T Post
		— Encoder —
IC301	0B11005A	IC NJM072DE
IC302	0B11363A	IC CX20188
L101	0B51262A	L-C Block BLU (MPX)
L201	0B51262A	L-C Block BLU (MPX)
ZD301,302	0B12168A	ZD 10V RD10JS-T1B2
R101,102	0B09717A	RK 47K 1/6W J
R103	0B09709A	RK 22K 1/6W J
R104	0B09749A	RK 1M 1/6W J
R105	0B09725A	RK 100K 1/6W J
R106	0B09698A	RK 7.5K 1/6W J
R107	0B09700A	RK 9.1K 1/6W J
R108	0B09749A	RK 1M 1/6W J
R109	0B09673A	RK 680 1/6W J
R110	0B22201A	RM 562 1/6W F
R111	0B22229A	RM 1.00K 1/6W F
R112,113	0B22275A	RM 2.67K 1/6W F
R114	0B22285A	RM 3.24K 1/6W F
R115	0B22294A	RM 3.83K 1/6W F
R116,117	0B22315A	RM 5.62K 1/6W F
R118	0B09523A	RM 13.7K 1/4W F
R119	0B22380A	RM 22.1K 1/6W F
R120,121	0B09677A	RK 1K 1/6W J
R122	0B09733A	RK 220K 1/6W J
R201,202	0B09717A	RK 47K 1/6W J
R203	0B09709A	RK 22K 1/6W J
R204	0B09749A	RK 1M 1/6W J
R205	0B09725A	RK 100K 1/6W J
R206	0B09698A	RK 7.5K 1/6W J
R207	0B09700A	RK 9.1K 1/6W J
R208	0B09749A	RK 1M 1/6W J
R209	0B09673A	RK 680 1/6W J
R210	0B22201A	RM 562 1/6W F
R211	0B22229A	RM 1.00K 1/6W F
R212,213	0B22275A	RM 2.67K 1/6W F
R214	0B22285A	RM 3.24K 1/6W F
R215	0B22294A	RM 3.83K 1/6W F
R216,217	0B22315A	RM 5.62K 1/6W F

Schematic Ref. No.	Part No.	Description
R218	0B09523A	RM 13.7K 1/4W F
R219	0B22380A	RM 22.1K 1/6W F
R220,221	0B09677A	RK 1K 1/6W J
R222	0B09733A	RK 220K 1/6W J
R301,302	0B24156A	RF 62 1/4W J
R303	0B22469A	RM 130K 1/6W F
C101	0B09148A	CE 10μ 25V (LN)
C103	0B09404A	CPP 1000P 100V J
C104,105	0B41133A	CPP 2200P 100V G
C107,108	0B09792A	CC 33P 50V J
C109	0B09393A	CC 68P 50V J
C110	0B41139A	CPP 3900P 100V G
C111	0B41143A	CPP 5600P 100V G
C112	0B05557A	CML 0.015μ 50V J
C113	0B05682A	CML 0.068μ 50V J
C114	0B41300A	CMM 0.15μ 50V J
C115	0B05813A	CML 0.056μ 50V J
C116	0B41302A	CMM 0.22μ 50V J
C117	0B09876A	CMM 0.47μ 50V J
C118,119	0B09187A	CE 1μ 50V (BP)
C120	0B05681A	CML 0.01μ 50V J
C121	0B40473A	CE 10μ 16V (BP)
C122	0B41388A	CPP 120P 50V J
C123,124	0B40473A	CE 10μ 16V (BP)
C201	0B09148A	CE 10μ 25V (LN)
C203	0B09404A	CPP 1000P 100V J
C204,205	0B41133A	CPP 2200P 100V G
C207,208	0B09792A	CC 33P 50V J
C209	0B09393A	CC 68P 50V J
C210	0B41139A	CPP 3900P 100V G
C211	0B41143A	CPP 5600P 100V G
C212	0B05557A	CML 0.015μ 50V J
C213	0B05682A	CML 0.068μ 50V J
C214	0B41300A	CMM 0.15μ 50V J
C215	0B05813A	CML 0.056μ 50V J
C216	0B41302A	CMM 0.22μ 50V J
C217	0B09876A	CMM 0.47μ 50V J
C218,219	0B09187A	CE 1μ 50V (BP)
C220	0B05681A	CML 0.01μ 50V J
C221	0B40473A	CE 10μ 16V (BP)
C222	0B41388A	CPP 120P 50V J
C223,224	0B40473A	CE 10μ 16V (BP)
C301,302	0B01391A	CE 220μ 25V
C303	0B01674A	CE 10μ 25V
CN33	0B81634A	2P-T Post
CN39,40	0B81635A	3P-T Post
IC305		
Q101	0B10033A	TR 2SC1740S
Q201	0B10033A	TR 2SC1740S
D101	0B06398A	SiD 1SS176
D201	0B06398A	SiD 1SS176
VR101,102	0B32127A	Semi VR 10K
VR103	0B32128A	Semi VR 20K
VR201,202	0B32127A	Semi VR 10K
VR203	0B32128A	Semi VR 20K
R091,092	0B09711A	RK 27K 1/6W J
R130	0B09689A	RK 3.3K 1/6W J
R131	0B09693A	RK 4.7K 1/6W J
R132	0B09697A	RK 6.8K 1/6W J
R133,134	0B09701A	RK 10K 1/6W J
R135	0B09701A	RK 10K 1/6W J
R136	0B09705A	RK 15K 1/6W J
R137	0B09711A	RK 27K 1/6W J
R138	0B05615A	RK 22K 1/4W J
R139	0B09749A	RK 1M 1/6W J
R140	0B22326A	RM 6.98K 1/6W F
R142	0B09711A	RK 27K 1/6W J
R230	0B09689A	RK 3.3K 1/6W J
R231	0B09693A	RK 4.7K 1/6W J
R232	0B09697A	RK 6.8K 1/6W J
R233,234	0B09701A	RK 10K 1/6W J
R235	0B09701A	RK 10K 1/6W J
R236	0B09705A	RK 15K 1/6W J
R237	0B09711A	RK 27K 1/6W J
R238	0B05615A	RK 22K 1/4W J
R239	0B09749A	RK 1M 1/6W J
R240	0B22326A	RM 6.98K 1/6W F
R242	0B09711A	RK 27K 1/6W J
R310,311	0B09693A	RK 4.7K 1/6W J
R312	0B01888A	RK 10K 1/4W J
C041,042	0B05659A	CML 5600P 50V J
C130	0B09322A	CPP 330P 100V J
C131	0B09591A	CPP 0.01μ 100V J
C132	0B05659A	CML 5600P 50V J
C230	0B09322A	CPP 330P 100V J
C231	0B09591A	CPP 0.01μ 100V J
C232	0B05659A	CML 5600P 50V J
C361	0B01863A	CE 3.3μ 50V

Schematic Ref. No.	Part No.	Description
	— Rec. Amp. —	
IC306	0B06387A	IC NJM2043DD
Q110,111	0B06299A	TR 2SC2878
Q112	0B10033A	TR 2SC1740S
Q210,211	0B06299A	TR 2SC2878
Q212	0B10033A	TR 2SC1740S
D110,111	0B06398A	SiD 1SS176
D112	0B06398A	SiD 1SS176
D210,211	0B06398A	SiD 1SS176
D212	0B06398A	SiD 1SS176
L105	0B51260A	L-C Block 42-5025
L106	0B51258A	Trap Coil 1.05mH
L205	0B51260A	L-C Block 42-5025
L206	0B51258A	Trap Coil 1.05mH
R093,094	0B09723A	RK 82K 1/6W J
R150	0B09681A	RK 1.5K 1/6W J
R151	0B09675A	RK 820 1/6W J
R153	0B09703A	RK 12K 1/6W J
R154,155	0B09701A	RK 10K 1/6W J
R156	0B09709A	RK 22K 1/6W J
R157	0B09713A	RK 33K 1/6W J
R158	0B09733A	RK 220K 1/6W J
R159	0B05936A	RK 10 1/4W J
R160	0B22229A	RM 1.00K 1/6W F
R161	0B22248A	RM 1.54K 1/6W F
R162	0B22296A	RM 3.92K 1/6W F
R163	0B22431A	RM 59.0K 1/6W F
R164	0B09733A	RK 220K 1/6W J
R250	0B09681A	RK 1.5K 1/6W J
R251	0B09675A	RK 820 1/6W J
R253	0B09703A	RK 12K 1/6W J
R254,255	0B09701A	RK 10K 1/6W J
R256	0B09709A	RK 22K 1/6W J
R257	0B09713A	RK 33K 1/6W J
R258	0B09733A	RK 220K 1/6W J
R259	0B05936A	RK 10 1/4W J
R260	0B22229A	RM 1.00K 1/6W F
R261	0B22248A	RM 1.54K 1/6W F
R262	0B22296A	RM 3.92K 1/6W F
R263	0B22431A	RM 59.0K 1/6W F
R264	0B09733A	RK 220K 1/6W J
C140	0B09322A	CPP 330P 100V J
C141	0B09270A	CPP 470P 100V J
C142	0B09834A	CPP 2200P 100V J
C143	0B09993A	CML 820P 50V J
C144	0B09828A	CPP 8200P 100V J
C145	0B05685A	CML 0.082μ 50V J
C146	0B09814A	CE 1μ 50V (LN)
C147	0B40154A	CE 47μ 16V (LN)
C240	0B09322A	CPP 330P 100V J
C241	0B09270A	CPP 470P 100V J
C242	0B09834A	CPP 2200P 100V J
C243	0B09993A	CML 820P 50V J
C244	0B09828A	CPP 8200P 100V J
C245	0B05685A	CML 0.082μ 50V J
C246	0B09814A	CE 1μ 50V (LN)
C247	0B40154A	CE 47μ 16V (LN)
C315,316	0B40154A	CE 47μ 16V (LN)
CN12	0B81761A	4P-T Post
TP1,2	0B81761A	4P-T Post
TP3,4	0B81761A	4P-T Post
	— Meter Amp. —	
Q121	0B06142A	TR 2SC2240 (BL)
Q122,123	0B10033A	TR 2SC1740S
Q221	0B06142A	TR 2SC2240 (BL)
Q222,223	0B10033A	TR 2SC1740S
ZD101	0B06230A	ZD 5.1V RD5.1EB2
ZD201	0B06230A	ZD 5.1V RD5.1EB2
D120,121	0B06398A	SiD 1SS176
D122	0B12584A	SiD 1N4148
D220,221	0B06398A	SiD 1SS176
D222	0B12584A	SiD 1N4148
D301	0B06398A	SiD 1SS176
VR118	0B32130A	Semi VR 100K
VR218	0B32130A	Semi VR 100K
R701	0B09709A	RK 22K 1/6W J
R702	0B09705A	RK 15K 1/6W J
R703,704	0B09719A	RK 56K 1/6W J
R705,706	0B09725A	RK 100K 1/6W J
R707	0B09725A	RK 100K 1/6W J
R708	0B05692A	RK 68K 1/4W J
R709	0B05776A	RK 1M 1/4W J
R751	0B09749A	RK 1M 1/6W J
R801	0B09709A	RK 22K 1/6W J
R802	0B09705A	RK 15K 1/6W J
R803	0B09719A	RK 56K 1/6W J

Schematic Ref. No.	Part No.	Description
R804	0B05508A	RK 56K 1/4W J
R805,806	0B09725A	RK 100K 1/6W J
R807	0B09725A	RK 100K 1/6W J
R808	0B05692A	RK 68K 1/4W J
R809	0B05776A	RK 1M 1/4W J
R851	0B09749A	RK 1M 1/6W J
C180	0B09148A	CE 10μ 25V (LN)
C181	0B01780A	CML 0.1μ 50V J
C280	0B09148A	CE 10μ 25V (LN)
C281	0B01780A	CML 0.1μ 50V J
CN8	0B81763A	6P-T Post
CN32	0B83137A	2P Connector
CN36	0B83141A	2P Connector
CN37	0B83142A	2P Connector
	— Headphone Amp. —	
IC320	0B06370A	IC NJM4556D
Q125	0B06299A	TR 2SC2878
Q225	0B06299A	TR 2SC2878
D310	0B06398A	SiD 1SS176
R715	0B09693A	RK 4.7K 1/6W J
R716	0B01889A	RK 100K 1/4W J
R717	0B09725A	RK 100K 1/6W J
R718	0B24155A	RF 12 1/4W J
R815	0B09693A	RK 4.7K 1/6W J
R816	0B01889A	RK 100K 1/4W J
R817	0B09725A	RK 100K 1/6W J
R818	0B24155A	RF 12 1/4W J
C330,331	0B01403A	CE 47μ 16V
	— Bias Osc. —	
Q301	0B06202A	TR 2SA562TM (Y)
Q302	0B10029A	TR 2SA933S
D302	0B06398A	SiD 1SS176
L301	0B51256A	Bias Osc. B01-JF
VR115	0B32127A	Semi VR 10K
VR116	0B32128A	Semi VR 20K
VR117	0B32129A	Semi VR 50K
VR215	0B32127A	Semi VR 10K
VR216	0B32128A	Semi VR 20K
VR217	0B32129A	Semi VR 50K
R330	0B09669A	RK 470 1/6W J
R331,332	0B09693A	RK 4.7K 1/6W J
R333,334	0B09701A	RK 10K 1/6W J
R336	0B05622A	RK 2.2K 1/4W J
R337	0B09721A	RK 68K 1/6W J
R338,339	0B09725A	RK 100K 1/6W J
R341,342	0B09733A	RK 220K 1/6W J
R343	0B09737A	RK 220K 1/6W J
R344	0B24158A	RF 10 1W J
R345	0B24159A	RF 22 1W J
R353	0B09717A	RK 47K 1/6W J
R360	0B09711A	RK 27K 1/6W J
R361,362	0B09725A	RK 100K 1/6W J
R720	0B09653A	RK 100 1/6W J
R721	0B09697A	RK 6.8K 1/6W J
R722	0B09705A	RK 15K 1/6W J
R820	0B09653A	RK 100 1/6W J
R821	0B09697A	RK 6.8K 1/6W J
R822	0B09705A	RK 15K 1/6W J
C335	0B01403A	CE 47μ 16V
C336	0B41255A	CPP 0.018μ 100V J
C337	0B05550A	CML 1000P 50V J
C338	0B09148A	CE 10μ 25V (LN)
C370,371	0B01780A	CML 0.1μ 50V J
CN10	0B81759A	2P-T Post
CN41	0B81759A	2P-T Post
CN42	0B81635A	3P-T Post
CN51	0B81773A	Receptacle 2P
CN51	0B81774A	Header 2P
CN52	0B81773A	Receptacle 2P
CN52	0B81775A	Header 3P
	— Switch —	
Q016	0B10062A	TR DTC144ES R1,R2=47K
R055	0B01857A	RK 1K 1/4W J
R069	0B01888A	RK 10K 1/4W J
R346,347	0B05794A	RK 680 1/4W J
R348,349	0B01888A	RK 10K 1/4W J
R350,351	0B09709A	RK 22K 1/6W J
R354	0B09701A	RK 10K 1/6W J
R363,364	0B01888A	RK 10K 1/4W J
R382	0B05794A	RK 680 1/4W J
C350,351	0B40083A	CE 2200μ 16V

Schematic Ref. No.	Part No.	Description
C353	0B01409A	CE 47μ 25V
SW001	0B70121A	Push Switch SPUJ19
SW301	0B70114A	Push Switch SPUJ42
SW302	0B70113A	Push Switch SPUJ32
SW303	0B70122A	Push Switch SPUL12
CN30	0B83135A	6P Connector
CN43	0B81635A	3P-T Post
CN44	0B81117A	1P Contact Pin
	0J05418B	P.C.B. Holder (1)
	0J05575A	Rivet 3x3.5 (2)
		— Logic —
IC603	0B11020A	IC TMP4315BP-1814
IC604	0B06368A	IC LM6416E-106
IC605	0B06317A	IC μPD4030BC
IC606	0B06214A	IC μPD4071BC
IC607	0B11369A	IC TA64
IC608	0B11368A	IC LB1649
Q602,603	0B10007A	TR 2SC3399
Q604	0B10007A	TR 2SC3399
Q605	0B06299A	TR 2SC2878
Q606	0B10003A	TR 2SA1345
Q608,609	0B10033A	TR 2SC1740S
Q610,611	0B10033A	TR 2SC1740S
Q612,613	0B10033A	TR 2SC1740S
Q614,615	0B10029A	TR 2SA933S
Q616,617	0B10029A	TR 2SA933S
Q618,619	0B06013A	TR 2SA733 (P,Q)
Q620,621	0B01872A	TR 2SC945L (P,Q)
Q622	0B01872A	TR 2SC945L (P,Q)
Q625	0B10033A	TR 2SC1740S
Q626	0B10029A	TR 2SA933S
Q628	0B10029A	TR 2SA933S
Q634	0B10097A	TR 2SA952 (K,L)
ZD403	0B12179A	ZD 15V RD15JS-T1B1
ZD601	0B12167A	ZD 10V RD10JS-T1B1
ZD603	0B12150A	ZD 5.6V RD5.6JS-T1B2
ZD604	0B12153A	ZD 6.2V RD6.2JS-T1B2
D608	0B06398A	SiD 1SS176
D609,610	0B06398A	SiD 1SS176
D611,612	0B06398A	SiD 1SS176
D613	0B06398A	SiD 1SS176
D614,615	0B12584A	SiD 1N4148
D617	0B06398A	SiD 1SS176
D618,619	0B06398A	SiD 1SS176
D620,621	0B06398A	SiD 1SS176
D622,623	0B06398A	SiD 1SS176
D624,625	0B06398A	SiD 1SS176
D626	0B12584A	SiD 1N4148
D627,628	0B06398A	SiD 1SS176
D629,630	0B06398A	SiD 1SS176
D631,632	0B06398A	SiD 1SS176
D633,634	0B06398A	SiD 1SS176
D641	0B06398A	SiD 1SS176
L601	0B51263A	L-C Block BLK
L602	0B24150A	Coil Resistor 5
VR601	0B32123A	Semi VR 500
R419	0B09669A	RK 470 1/6W J
R601,602	0B09677A	RK 1K 1/6W J
R603	0B09677A	RK 1K 1/6W J
R604	0B09717A	RK 47K 1/6W J
R605	0B05641A	RK 47K 1/4W J
R606	0B09717A	RK 47K 1/6W J
R607	0B05641A	RK 47K 1/4W J
R608,609	0B09717A	RK 47K 1/6W J
R610	0B09729A	RK 150K 1/6W J
R611	0B24160A	RF 15 2W J
R612	0B09677A	RK 1K 1/6W J
R613	0B09717A	RK 47K 1/6W J
R615	0B05641A	RK 47K 1/4W J
R616	0B09693A	RK 4.7K 1/6W J
R618,619	0B09701A	RK 10K 1/6W J
R620	0B09701A	RK 10K 1/6W J
R621	0B09693A	RK 4.7K 1/6W J
R623	0B09677A	RK 1K 1/6W J
R632	0B09701A	RK 10K 1/6W J
R633	0B09677A	RK 1K 1/6W J
R634,635	0B09693A	RK 4.7K 1/6W J
R636	0B09693A	RK 4.7K 1/6W J
R637	0B09671A	RK 560 1/6W J
R638,639	0B05575A	RK 560 1/4W J

Schematic Ref. No.	Part No.	Description
R640	0B05575A	RK 560 1/4W J
R641	0B09687A	RK 2.7K 1/6W J
R642,643	0B09701A	RK 10K 1/6W J
R644,645	0B09701A	RK 10K 1/6W J
R646,647	0B09701A	RK 10K 1/6W J
R649	0B01888A	RK 10K 1/4W J
R650,651	0B09701A	RK 10K 1/6W J
R652	0B09701A	RK 10K 1/6W J
R654,655	0B09725A	RK 100K 1/6W J
R656,657	0B09725A	RK 100K 1/6W J
R658	0B05576A	RK 470 1/4W J
R659	0B09725A	RK 100K 1/6W J
R661,662	0B09713A	RK 33K 1/6W J
R663,664	0B09717A	RK 47K 1/6W J
R665	0B09717A	RK 47K 1/6W J
R666	0B09664A	RK 300 1/6W J
R667,668	0B09717A	RK 47K 1/6W J
R669,670	0B09717A	RK 47K 1/6W J
R671,672	0B05625A	RK 220K 1/4W J
R673	0B05625A	RK 220K 1/4W J
R674	0B09733A	RK 220K 1/6W J
R675,676	0B09737A	RK 330K 1/6W J
R677,678	0B09737A	RK 330K 1/6W J
R679	0B09701A	RK 10K 1/6W J
R680	0B09749A	RK 1M 1/6W J
R681	0B09735A	RK 270K 1/6W J
R682	0B09611A	RK 1.8 1/6W J
R683	0B09623A	RF 5.6 1/6W J
R684	0B09669A	RK 470 1/6W J
R685	0B09689A	RK 3.3K 1/6W J
R686	0B09697A	RK 6.8K 1/6W J
R687	0B09689A	RK 3.3K 1/6W J
R688	0B09707A	RK 18K 1/6W J
R689	0B09719A	RK 56K 1/6W J
R690	0B09721A	RK 68K 1/6W J
R691	0B09681A	RK 1.5K 1/6W J
R692,693	0B09713A	RK 33K 1/6W J
R694	0B09713A	RK 33K 1/6W J
R695	0B09695A	RK 5.6K 1/6W J
R696,697	0B09670A	RK 510 1/6W J
R698	0B01857A	RK 1K 1/4W J
R699	0B09677A	RK 1K 1/6W J
R936,937	0B09701A	RK 10K 1/6W J
C415	0B01403A	CE 47μ 16V
C601,602	0B09223A	CE 1μ 50V (LN)
C603	0B09223A	CE 1μ 50V (LN)
C604	0B09327A	CE 0.33μ 50V (LN)
C605	0B09222A	CE 0.47μ 50V (LN)
C606	0B09332A	CE 2.2μ 50V (LN)
C607	0B09148A	CE 10μ 25V (LN)
C608,609	0B09150A	CE 33μ 25V (LN)
C610	0B01412A	CE 10μ 16V
C611	0B05841A	CE 330μ 10V
C612	0B40079A	CE 220μ 16V
C613,614	0B09286A	CC 470P 50V K
C615	0B09290A	CC 0.01μ 50V Z
C616	0B05557A	CML 0.015μ 50V J
C617	0B05892A	CC 100P 50V K
C619	0B01403A	CE 47μ 16V
C620,621	0B01780A	CML 0.1μ 50V J
CN1	0B81762A	5P-T Post
CN2	0B81766A	9P-T Post
CN3	0B81764A	7P-T Post
CN4	0B81763A	6P-T Post
CN5	0B81762A	5P-T Post
CN6	0B81764A	7P-T Post
CN7	0B81763A	6P-T Post
CN22	0B81759A	2P-T Post
CN31	0B83136A	4P Connector
	0B81754A	8P DIN Socket (1)
		— Miscellaneous —
	0B60520A	Main P.C.B.
CN9	0B83118A	3P Connector
CN13	0B83129A	3P Ribbon Cable 220
CN14	0B82267A	4P Ribbon Cable 160
CN15	0B82149A	4P Ribbon Cable 100
CN17	0B83130A	6P Ribbon Cable 100
CN20	0B83165A	5P Ribbon Cable 160 (2)
CN23	0B82116B	2P Ribbon Cable 160
CN24	0B82193A	3P Ribbon Cable 220
CN35	0B81635A	3P-T Post
CN53	0B82078A	PD Connector V400
CJ	0B82065C	PD Connector V90
	0B80152B	Wire 120 mm BLK (1)
	0J05419A	VR Earth Plate (2)
	0V10050C	Wire 52mm BLK (2)

8.13.2. Main P.C.B. Ass'y

Schematic Ref. No.	Part No.	Description
	BA07030A	Main P.C.B. Ass'y Serial Nos.: A13101001 - 02450 (CR-4A) A13150001 - 53800 (CR-4/4E/40)
	— PB Eq. Amp. —	
Q115	0B10213A	FET 2SK371 (GR)
Q116	0B06142A	TR 2SC2240 (BL)
Q117	0B10050A	TR 2SA970 (BL)
Q118	0B10033A	TR 2SC1740S
Q215	0B10213A	FET 2SK371 (GR)
Q216	0B06142A	TR 2SC2240 (BL)
Q217	0B10050A	TR 2SA970 (BL)
Q218	0B10033A	TR 2SC1740S
L110	0B51261A	Trap Unit
L210	0B51261A	Trap Unit
VR105	0B32124A	Semi VR 1K
VR205	0B32124A	Semi VR 1K
R170	0B09661A	RK 220 1/6W J
R171	0B09673A	RK 680 1/6W J
R172	0B09697A	RK 6.8K 1/6W J
R173	0B09709A	RK 22K 1/6W J
R174	0B01888A	RK 10K 1/4W J
R175	0B09725A	RK 100K 1/6W J
R176	0B09721A	RK 68K 1/6W J
R177	0B09749A	RK 1M 1/6W J
R178	0B22085A	RM 54.9 1/6W F
R179	0B22274A	RM 2.61K 1/6W F
R180	0B22313A	RM 5.49K 1/6W F
R181	0B22472A	RM 140K 1/6W F
R182	0B22329A	RM 7.50K 1/6W F
R183	0B22344A	RM 10.2K 1/6W F
R184	0B24156A	RF 62 1/4W J
R270	0B09661A	RK 220 1/6W J
R271	0B09673A	RK 680 1/6W J
R272	0B09697A	RK 6.8K 1/6W J
R273	0B09709A	RK 22K 1/6W J
R274	0B01888A	RK 10K 1/4W J
R275	0B09725A	RK 100K 1/6W J
R276	0B09721A	RK 68K 1/6W J
R277	0B09749A	RK 1M 1/6W J
R278	0B22085A	RM 54.9 1/6W F
R279	0B22274A	RM 2.61K 1/6W F
R280	0B22313A	RM 5.49K 1/6W F
R281	0B22472A	RM 140K 1/6W F
R282	0B22329A	RM 7.50K 1/6W F
R283	0B22344A	RM 10.2K 1/6W F
R284	0B24156A	RF 62 1/4W J
R750	0B24156A	RF 62 1/4W J
R850	0B24156A	RF 62 1/4W J
C148	0B41402A	CPP 470P 50V J
C150	0B09812A	CC 2P 50V C
C151	0B41390A	CPP 150P 50V J
C152	0B41239A	CPP 3900P 100V J
C153	0B09405A	CPP 0.022μ 100V J
C154	0B41245A	CPP 6800P 100V J
C155	0B09833A	CE 4.7μ 25V (LN)
C156	0B05899A	CE 220μ 10V
C157	0B05841A	CE 330μ 10V
C158,159	0B40081A	CE 470μ 16V
C248	0B41402A	CPP 470P 50V J
C250	0B09812A	CC 2P 50V C
C251	0B41390A	CPP 150P 50V J
C252	0B41239A	CPP 3900P 100V J
C253	0B09405A	CPP 0.022μ 100V J
C254	0B41245A	CPP 6800P 100V J
C255	0B09833A	CE 4.7μ 25V (LN)
C256	0B05899A	CE 220μ 10V
C257	0B05841A	CE 330μ 10V
C258,259	0B40081A	CE 470μ 16V
C360	0B09147A	CE 3.3μ 50V (LN)
CN19	0B81761A	4P-T Post
	— Decoder —	
IC315	0B11363A	IC CX20188
ZD305,306	0B12168A	ZD 10V RD10JS-T1B2
VR110	0B32125A	Semi VR 2K
VR210	0B32125A	Semi VR 2K
R185	0B09673A	RK 680 1/6W J
R186	0B09698A	RK 7.5K 1/6W J
R187	0B09700A	RK 9.1K 1/6W J
R188	0B09725A	RK 100K 1/6W J
R189	0B09749A	RK 1M 1/6W J
R191	0B22229A	RM 1.00K 1/6W F
R192	0B22201A	RM 562 1/6W F
R193	0B22285A	RM 3.24K 1/6W F
R194	0B22294A	RM 3.83K 1/6W F
R195	0B09547A	RM 2.21K 1/4W F
R196	0B22380A	RM 22.1K 1/6W F
R197	0B09717A	RK 47K 1/6W J
R285	0B09673A	RK 680 1/6W J
R286	0B09698A	RK 7.5K 1/6W J
R287	0B09700A	RK 9.1K 1/6W J
R288	0B09725A	RK 100K 1/6W J
R289	0B09749A	RK 1M 1/6W J
R291	0B22229A	RM 1.00K 1/6W F
R292	0B22201A	RM 562 1/6W F
R293	0B22285A	RM 3.24K 1/6W F
R294	0B22294A	RM 3.83K 1/6W F
R295	0B09547A	RM 2.21K 1/4W F
R296	0B22380A	RM 22.1K 1/6W F
R297	0B09717A	RK 47K 1/6W J
R325	0B22469A	RM 130K 1/6W F
R326,327	0B24156A	RF 62 1/4W J
C160	0B41386A	CPP 100P 50V J
C161,162	0B41133A	CPP 2200P 100V G
C163	0B41139A	CPP 3900P 100V G
C164	0B41143A	CPP 5600P 100V G
C165,166	0B09187A	CE 1μ 50V (BP)
C167	0B05813A	CML 0.056μ 50V J
C168	0B05682A	CML 0.068μ 50V J
C169	0B41300A	CMM 0.15μ 50V J
C170	0B41302A	CMM 0.22μ 50V J
C171	0B09876A	CMM 0.47μ 50V J
C172	0B05557A	CML 0.015μ 50V J
C173	0B05681A	CML 0.01μ 50V J
C174	0B40473A	CE 10μ 16V (BP)
C260	0B41386A	CPP 100P 50V J
C261,262	0B41133A	CPP 2200P 100V G
C263	0B41139A	CPP 3900P 100V G
C264	0B41143A	CPP 5600P 100V G
C265,266	0B09187A	CE 1μ 50V (BP)
C267	0B05813A	CML 0.056μ 50V J
C268	0B05682A	CML 0.068μ 50V J
C269	0B41300A	CMM 0.15μ 50V J
C270	0B41302A	CMM 0.22μ 50V J
C271	0B09876A	CMM 0.47μ 50V J
C272	0B05557A	CML 0.015μ 50V J
C273	0B05681A	CML 0.01μ 50V J
C274	0B40473A	CE 10μ 16V (BP)
C320	0B01391A	CE 220μ 25V
C325	0B01391A	CE 220μ 25V
CN34	0B81635A	3P-T Post
	— Encoder —	
IC301	0B11005A	IC NJM072DE
IC302	0B11363A	IC CX20188
L101	0B51262A	L-C Block BLU (MPX)
L201	0B51262A	L-C Block BLU (MPX)
ZD301,302	0B12168A	ZD 10V RD10JS-T1B2
R101,102	0B09717A	RK 47K 1/6W J
R103	0B09709A	RK 22K 1/6W J
R104	0B09749A	RK 1M 1/6W J
R105	0B09725A	RK 100K 1/6W J
R106	0B09698A	RK 7.5K 1/6W J
R107	0B09700A	RK 9.1K 1/6W J
R108	0B09749A	RK 1M 1/6W J
R109	0B09673A	RK 680 1/6W J
R110	0B22201A	RM 562 1/6W F
R111	0B22229A	RM 1.00K 1/6W F
R112,113	0B22275A	RM 2.67K 1/6W F
R114	0B22285A	RM 3.24K 1/6W F
R115	0B22294A	RM 3.83K 1/6W F
R116,117	0B22315A	RM 5.62K 1/6W F
R118	0B09523A	RM 13.7K 1/4W F
R119	0B22380A	RM 22.1K 1/6W F
R120,121	0B09677A	RK 1K 1/6W J
R122	0B09733A	RK 220K 1/6W J
R201,202	0B09717A	RK 47K 1/6W J
R203	0B09709A	RK 22K 1/6W J
R204	0B09749A	RK 1M 1/6W J
R205	0B09725A	RK 100K 1/6W J
R206	0B09698A	RK 7.5K 1/6W J
R207	0B09700A	RK 9.1K 1/6W J
R208	0B09749A	RK 1M 1/6W J
R209	0B09673A	RK 680 1/6W J
R210	0B22201A	RM 562 1/6W F
R211	0B22229A	RM 1.00K 1/6W F
R212,213	0B22275A	RM 2.67K 1/6W F
R214	0B22285A	RM 3.24K 1/6W F
R215	0B22294A	RM 3.83K 1/6W F
R216,217	0B22315A	RM 5.62K 1/6W F
R218	0B09523A	RM 13.7K 1/4W F
R219	0B22380A	RM 22.1K 1/6W F
R220,221	0B09677A	RK 1K 1/6W J
R222	0B09733A	RK 220K 1/6W J
R301,302	0B24156A	RF 62 1/4W J
R303	0B22469A	RM 130K 1/6W F
C101	0B09148A	CE 10μ 25V (LN)
C103	0B09404A	CPP 1000P 100V J
C104,105	0B41133A	CPP 2200P 100V G
C107,108	0B09792A	CC 33P 50V J
C109	0B09393A	CC 68P 50V J
C110	0B41139A	CPP 3900P 100V G
C111	0B41143A	CPP 5600P 100V G
C112	0B05557A	CML 0.015μ 50V J
C113	0B05682A	CML 0.068μ 50V J
C114	0B41300A	CMM 0.15μ 50V J
C115	0B05813A	CML 0.056μ 50V J
C116	0B41302A	CMM 0.22μ 50V J
C117	0B09876A	CMM 0.47μ 50V J
C118,119	0B09187A	CE 1μ 50V (BP)
C120	0B05681A	CML 0.01μ 50V J
C121	0B40473A	CE 10μ 16V (BP)
C122	0B41388A	CPP 120P 50V J
C123,124	0B40473A	CE 10μ 16V (BP)
C201	0B09148A	CE 10μ 25V (LN)
C203	0B09404A	CPP 1000P 100V J
C204,205	0B41133A	CPP 2200P 100V G
C207,208	0B09792A	CC 33P 50V J
C209	0B09393A	CC 68P 50V J
C210	0B41139A	CPP 3900P 100V G
C211	0B41143A	CPP 5600P 100V G
C212	0B05557A	CML 0.015μ 50V J
C213	0B05682A	CML 0.068μ 50V J
C214	0B41300A	CMM 0.15μ 50V J
C215	0B05813A	CML 0.056μ 50V J
C216	0B41302A	CMM 0.22μ 50V J
C217	0B09876A	CMM 0.47μ 50V J
C218,219	0B09187A	CE 1μ 50V (BP)
C220	0B05681A	CML 0.01μ 50V J
C221	0B40473A	CE 10μ 16V (BP)
C222	0B41388A	CPP 120P 50V J
C223,224	0B40473A	CE 10μ 16V (BP)
C301,302	0B01391A	CE 220μ 25V
C303	0B01674A	CE 10μ 25V
CN33	0B81634A	2P-T Post
CN39,40	0B81635A	3P-T Post
	— Rec. Level —	
IC305	0B11027A	IC TC9145P
Q101	0B10033A	TR 2SC1740S
Q201	0B10033A	TR 2SC1740S
D101	0B06398A	SiD 1SS176
D201	0B06398A	SiD 1SS176
VR101,102	0B32127A	Semi VR 10K
VR103	0B32128A	Semi VR 20K
VR201,202	0B32127A	Semi VR 10K
VR203	0B32128A	Semi VR 20K
R130	0B09689A	RK 3.3K 1/6W J
R131	0B09693A	RK 4.7K 1/6W J
R132	0B09697A	RK 6.8K 1/6W J
R133,134	0B09701A	RK 10K 1/6W J
R135	0B09701A	RK 10K 1/6W J
R136	0B09705A	RK 15K 1/6W J
R137	0B09711A	RK 27K 1/6W J
R138	0B05615A	RK 22K 1/4W J
R139	0B09749A	RK 1M 1/6W J
R140	0B22326A	RM 6.98K 1/6W F
R142	0B09709A	RK 22K 1/6W J
R230	0B09689A	RK 3.3K 1/6W J
R231	0B09693A	RK 4.7K 1/6W J
R232	0B09697A	RK 6.8K 1/6W J
R233,234	0B09701A	RK 10K 1/6W J
R235	0B09701A	RK 10K 1/6W J
R236	0B09705A	RK 15K 1/6W J
R237	0B09711A	RK 27K 1/6W J
R238	0B05615A	RK 22K 1/4W J
R239	0B09749A	RK 1M 1/6W J
R240	0B22326A	RM 6.98K 1/6W F
R242	0B09709A	RK 22K 1/6W J
R310,311	0B09693A	RK 4.7K 1/6W J
R312	0B01888A	RK 10K 1/4W J
C130	0B09322A	CPP 330P 100V J
C131	0B09591A	CPP 0.01μ 100V J
C132	0B05659A	CML 5600P 50V J
C133	0B05687A	CML 1200P 50V J
C230	0B09322A	CPP 330P 100V J
C231	0B09591A	CPP 0.01μ 100V J
C232	0B05659A	CML 5600P 50V J
C233	0B05687A	CML 1200P 50V J
C361	0B01863A	CE 3.3μ 50V
IC306	0B06387A	IC NJM2043DD
Q110,111	0B06299A	TR 2SC2878
Q112	0B10033A	TR 2SC1740S
Q210,211	0B06299A	TR 2SC2878
Q212	0B10033A	TR 2SC1740S
D110,111	0B06398A	SiD 1SS176
D112	0B06398A	SiD 1SS176
D210,211	0B06398A	SiD 1SS176
D212	0B06398A	SiD 1SS176
L105	0B51260A	L-C Block 42-5025
L106	0B51258A	Trap Coil 1.05mH
L205	0B51260A	L-C Block 42-5025
L206	0B51258A	Trap Coil 1.05mH
R150	0B09681A	RK 1.5K 1/6W J
R151	0B09675A	RK 820 1/6W J
R153	0B09703A	RK 12K 1/6W J
R154,155	0B09701A	RK 10K 1/6W J
R156	0B09709A	RK 22K 1/6W J
R157	0B09713A	RK 33K 1/6W J
R158	0B09733A	RK 220K 1/6W J
R159	0B05936A	RK 10 1/4W J
R160	0B22229A	RM 1.00K 1/6W F
R161	0B22248A	RM 1.54K 1/6W F
R162	0B22296A	RM 3.92K 1/6W F
R163	0B22431A	RM 59.0K 1/6W F
R164	0B09733A	RK 220K 1/6W J
R250	0B09681A	RK 1.5K 1/6W J
R251	0B09675A	RK 820 1/6W J
R253	0B09703A	RK 12K 1/6W J
R254,255	0B09701A	RK 10K 1/6W J
R256	0B09709A	RK 22K 1/6W J
R257	0B09713A	RK 33K 1/6W J
R258	0B09733A	RK 220K 1/6W J
R259	0B05936A	RK 10 1/4W J
R260	0B22229A	RM 1.00K 1/6W F
R261	0B22248A	RM 1.54K 1/6W F
R262	0B22296A	RM 3.92K 1/6W F
R263	0B22431A	RM 59.0K 1/6W F
R264	0B09733A	RK 220K 1/6W J
C140	0B09322A	CPP 330P 100V J
C141	0B09270A	CPP 470P 100V J
C142	0B09834A	CPP 2200P 100V J
C143	0B05687A	CML 1200P 50V J
C144	0B09828A	CPP 8200P 100V J
C145	0B05685A	CML 0.082μ 50V J
C146	0B09814A	CE 1μ 50V (LN)
C147	0B40154A	CE 47μ 16V (LN)
C240	0B09322A	CPP 330P 100V J
C241	0B09270A	CPP 470P 100V J
C242	0B09834A	CPP 2200P 100V J
C243	0B05687A	CML 1200P 50V J
C244	0B09828A	CPP 8200P 100V J
C245	0B05685A	CML 0.082μ 50V J
C246	0B09814A	CE 1μ 50V (LN)
C247	0B40154A	CE 47μ 16V (LN)
C315,316	0B40154A	CE 47μ 16V (LN)
CN12	0B81761A	4P-T Post
TP1,2	0B81761A	4P-T Post
TP3,4	0B81761A	4P-T Post
	— Meter Amp. —	
Q121	0B06142A	TR 2SC2240 (BL)
Q122,123	0B10033A	TR 2SC1740S
Q221	0B06142A	TR 2SC2240 (BL)
Q222,223	0B10033A	TR 2SC1740S
ZD101	0B06230A	ZD 5.1V RD5.1EB2
ZD201	0B06230A	ZD 5.1V RD5.1EB2
D120,121	0B06398A	SiD 1SS176
D122	0B12584A	SiD 1N4148
D220,221	0B06398A	SiD 1SS176
D222	0B12584A	SiD 1N4148
D301	0B06398A	SiD 1SS176
VR118	0B32130A	Semi VR 100K
VR218	0B32130A	Semi VR 100K
R701	0B09709A	RK 22K 1/6W J
R702	0B09705A	RK 15K 1/6W J
R703,704	0B09719A	RK 56K 1/6W J
R705,706	0B09725A	RK 100K 1/6W J
R707	0B09725A	RK 100K 1/6W J
R708	0B05692A	RK 68K 1/4W J
R709	0B05776A	RK 1M 1/6W J
R751	0B09749A	RK 1M 1/6W J
R801	0B09709A	RK 22K 1/6W J
R802	0B09705A	RK 15K 1/6W J
R803	0B09719A	RK 56K 1/6W J
R804	0B05508A	RK 56K 1/4W J
R805,806	0B09725A	RK 100K 1/6W J
R807	0B09725A	RK 100K 1/6W J
R808	0B05692A	RK 68K 1/4W J
R809	0B05776A	RK 1M 1/4W J
R851	0B09749A	RK 1M 1/6W J
C180	0B09148A	CE 10μ 25V (LN)
C181	0B01780A	CML 0.1μ 50V J
C280	0B09148A	CE 10μ 25V (LN)
C281	0B01780A	CML 0.1μ 50V J
CN8	0B81763A	6P-T Post
CN32	0B83137A	2P Connector
CN36	0B83141A	2P Connector
CN37	0B83142A	2P Connector
	— Headphone Amp. —	
IC320	0B06370A	IC NJM4556D
Q125	0B06299A	TR 2SC2878
Q225	0B06299A	TR 2SC2878
D310	0B06398A	SiD 1SS176
R715	0B09693A	RK 4.7K 1/6W J
R716	0B01889A	RK 100K 1/4W J
R717	0B09725A	RK 100K 1/6W J
R718	0B24155A	RF 12 1/4W J
R815	0B09693A	RK 4.7K 1/6W J
R816	0B01889A	RK 100K 1/4W J
R817	0B09725A	RK 100K 1/6W J
R818	0B24155A	RF 12 1/4W J
C330,331	0B01403A	CE 47μ 16V
	— Bias Osc. —	
Q301	0B06202A	TR 2SA562TM (Y)
Q302	0B10029A	TR 2SA933S
D302	0B06398A	SiD 1SS176
L301	0B51256A	Bias Osc. B01-JF
VR115	0B32127A	Semi VR 10K
VR116	0B32128A	Semi VR 20K
VR117	0B32129A	Semi VR 50K
VR215	0B32127A	Semi VR 10K
VR216	0B32128A	Semi VR 20K
VR217	0B32129A	Semi VR 50K
R330	0B09669A	RK 470 1/6W J
R331,332	0B09693A	RK 4.7K 1/6W J
R333,334	0B09701A	RK 10K 1/6W J
R336	0B05622A	RK 2.2K 1/4W J
R337	0B09721A	RK 68K 1/6W J
R338,339	0B09725A	RK 100K 1/6W J
R341,342	0B09733A	RK 220K 1/6W J
R343	0B09737A	RK 220K 1/6W J
R344	0B24158A	RF 10 1W J
R345	0B24159A	RF 22 1W J
R353	0B09717A	RK 47K 1/6W J
R360	0B09711A	RK 27K 1/6W J
R361,362	0B09725A	RK 100K 1/6W J
R720	0B09653A	RK 100 1/6W J
R721	0B09697A	RK 6.8K 1/6W J
R722	0B09705A	RK 15K 1/6W J
R820	0B09653A	RK 100 1/6W J
R821	0B09697A	RK 6.8K 1/6W J
R822	0B09705A	RK 15K 1/6W J
C335	0B01403A	CE 47μ 16V
C336	0B41255A	CPP 0.018μ 100V J
C337	0B05550A	CML 1000P 50V J
C338	0B09148A	CE 10μ 25V (LN)
C370,371	0B01780A	CML 0.1μ 50V J
CN10	0B81759A	2P-T Post
CN41	0B81759A	2P-T Post
CN42	0B81635A	3P-T Post
CN51	0B81773A	Receptacle 2P
CN51	0B81774A	Header 2P
CN52	0B81773A	Receptacle 2P
CN52	0B81775A	Header 3P
	— Switch —	
Q016	0B10062A	TR DTC144ES R1,R2=47K
R055	0B01857A	RK 1K 1/4W J
R069	0B01888A	RK 10K 1/4W J
R346,347	0B05794A	RK 680 1/4W J
R348,349	0B01888A	RK 10K 1/4W J
R350,351	0B09709A	RK 22K 1/6W J
R354	0B09701A	RK 10K 1/6W J
R363,364	0B01888A	RK 10K 1/4W J
R382	0B05794A	RK 680 1/4W J
C350,351	0B40083A	CE 2200μ 16V
C353	0B01409A	CE 47μ 25V
C372	0B01780A	CML 0.1μ 50V J
SW001	0B70121A	Push Switch SPUJ19
SW301	0B70114A	Push Switch SPUJ42
SW302	0B70113A	Push Switch SPUJ32
SW303	0B70122A	Push Switch SPUL12
CN30	0B83135A	6P Connector
CN43	0B81635A	3P-T Post
CN44	0B81117A	1P Contact Pin
	0J05418B	P.C.B. Holder (1)
	0J05575A	Rivet 3x3.5 (2)
	— Logic —	
IC603	0B11020A	IC TMP4315BP-1814
IC604	0B06368A	IC LM6416E-106
IC605	0B06317A	IC μPD4030BC
IC606	0B06214A	IC μPD4071BC
IC607	0B11369A	IC TA64
IC608	0B11368A	IC LB1649
Q602,603	0B10007A	TR 2SC3399
Q604	0B10007A	TR 2SC3399
Q605	0B06299A	TR 2SC2878
Q606	0B10003A	TR 2SA1345
Q608,609	0B10033A	TR 2SC1740S
Q610,611	0B10033A	TR 2SC1740S
Q612,613	0B10033A	TR 2SC1740S
Q614,615	0B10029A	TR 2SA933S
Q616,617	0B10029A	TR 2SA933S
Q618,619	0B06013A	TR 2SA733 (P,Q)
Q620,621	0B01872A	TR 2SC945L (P,Q)
Q622	0B01872A	TR 2SC945L (P,Q)
Q625	0B10033A	TR 2SC1740S
Q626	0B10029A	TR 2SA933S
Q628	0B10029A	TR 2SA933S
Q634	0B10097A	TR 2SA952 (K,L)
ZD403	0B12179A	ZD 15V RD15JS-T1B1
ZD601	0B12167A	ZD 10V RD10JS-T1B1
ZD603	0B12150A	ZD 5.6V RD5.6JS-T1B2
ZD604	0B12153A	ZD 6.2V RD6.2JS-T1B2
D608	0B06398A	SiD 1SS176
D609,610	0B06398A	SiD 1SS176
D611,612	0B06398A	SiD 1SS176
D613	0B06398A	SiD 1SS176
D614,615	0B12584A	SiD 1N4148
D617	0B06398A	SiD 1SS176
D618,619	0B06398A	SiD 1SS176
D620,621	0B06398A	SiD 1SS176
D622,623	0B06398A	SiD 1SS176
D624,625	0B06398A	SiD 1SS176
D626	0B12584A	SiD 1N4148
D627,628	0B06398A	SiD 1SS176
D629,630	0B06398A	SiD 1SS176
D631,632	0B06398A	SiD 1SS176
D633,634	0B06398A	SiD 1SS176
D641	0B06398A	SiD 1SS176
L601	0B51263A	L-C Block BLK
L602	0B24150A	Coil Resistor 5
VR601	0B32123A	Semi VR 500
R419	0B09669A	RK 470 1/6W J
R601,602	0B09677A	RK 1K 1/6W J
R603	0B09677A	RK 1K 1/6W J
R604	0B09717A	RK 47K 1/6W J
R605	0B05641A	RK 47K 1/4W J
R606	0B09717A	RK 47K 1/6W J
R607	0B05641A	RK 47K 1/4W J
R608,609	0B09717A	RK 47K 1/6W J
R610	0B09729A	RK 150K 1/6W J
R611	0B24160A	RF 15 2W J
R612	0B09677A	RK 1K 1/6W J
R613	0B09717A	RK 47K 1/6W J
R615	0B05641A	RK 47K 1/4W J
R616	0B09693A	RK 4.7K 1/6W J
R618,619	0B09701A	RK 10K 1/6W J
R620	0B09701A	RK 10K 1/6W J
R621	0B09693A	RK 4.7K 1/6W J
R623	0B09677A	RK 1K 1/6W J
R632	0B09701A	RK 10K 1/6W J
R633	0B09677A	RK 1K 1/6W J
R634,635	0B09693A	RK 4.7K 1/6W J
R636	0B09693A	RK 4.7K 1/6W J
R637	0B09671A	RK 560 1/6W J
R638,639	0B05575A	RK 560 1/4W J
R640		
R641		
R642,643		
R644,645		
R646,647		
R649		
R650,651		
R652		
R654,655		
R656,657		
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R661,662		
R663,664		
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R667,668		
R669,670		
R671,672		
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R675,676		
R677,678		
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R692,693		
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R695		
R696,697		
R698		
R699		
R936,937		
C415		
C601,602		
C603		
C604		
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C608,609		
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C613,614		
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C617		
C619		
C620,621		
CN1		
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CN35		
CN53		
CJ		

Schematic Ref. No.	Part No.	Description
R193	0B22285A	RM 3.24K 1/6W F
R194	0B22294A	RM 3.83K 1/6W F
R195	0B09547A	RM 2.21K 1/4W F
R196	0B22380A	RM 22.1K 1/6W F
R197	0B09717A	RK 47K 1/6W J
R285	0B09673A	RK 680 1/6W J
R286	0B09698A	RK 7.5K 1/6W J
R287	0B09700A	RK 9.1K 1/6W J
R288	0B09725A	RK 100K 1/6W J
R289	0B09749A	RK 1M 1/6W J
R291	0B22229A	RM 1.00K 1/6W F
R292	0B22201A	RM 562 1/6W F
R293	0B22285A	RM 3.24K 1/6W F
R294	0B22294A	RM 3.83K 1/6W F
R295	0B09547A	RM 2.21K 1/4W F
R296	0B22380A	RM 22.1K 1/6W F
R297	0B09717A	RK 47K 1/6W J
R325	0B22469A	RM 130K 1/6W F
R326,327	0B24156A	RF 62 1/4W J
C160	0B41386A	CPP 100P 50V J
C161,162	0B41133A	CPP 2200P 100V G
C163	0B41139A	CPP 3900P 100V G
C164	0B41143A	CPP 5600P 100V G
C165,166	0B09187A	CE 1μ 50V (BP)
C167	0B05813A	CML 0.056μ 50V J
C168	0B05682A	CML 0.068μ 50V J
C169	0B41300A	CMM 0.15μ 50V J
C170	0B41302A	CMM 0.22μ 50V J
C171	0B09876A	CMM 0.47μ 50V J
C172	0B05557A	CML 0.015μ 50V J
C173	0B05681A	CML 0.01μ 50V J
C174	0B40473A	CE 10μ 16V (BP)
C260	0B41386A	CPP 100P 50V J
C261,262	0B41133A	CPP 2200P 100V G
C263	0B41139A	CPP 3900P 100V G
C264	0B41143A	CPP 5600P 100V G
C265,266	0B09187A	CE 1μ 50V (BP)
C267	0B05813A	CML 0.056μ 50V J
C268	0B05682A	CML 0.068μ 50V J
C269	0B41300A	CMM 0.15μ 50V J
C270	0B41302A	CMM 0.22μ 50V J
C271	0B09876A	CMM 0.47μ 50V J
C272	0B05557A	CML 0.015μ 50V J
C273	0B05681A	CML 0.01μ 50V J
C274	0B40473A	CE 10μ 16V (BP)
C320	0B01391A	CE 220μ 25V
C325	0B01391A	CE 220μ 25V
CN34	0B81635A	3P-T Post
		— Encoder —
IC301	0B11005A	IC NJM072DE
IC302	0B11363A	IC CX20188
L101	0B51262A	L-C Block BLU (MPX)
L201	0B51262A	L-C Block BLU (MPX)
ZD301,302	0B12168A	ZD 10V RD10JS-T1B2
R101,102	0B09717A	RK 47K 1/6W J
R103	0B09709A	RK 22K 1/6W J
R104	0B09749A	RK 1M 1/6W J
R105	0B09725A	RK 100K 1/6W J
R106	0B09698A	RK 7.5K 1/6W J
R107	0B09700A	RK 9.1K 1/6W J
R108	0B09749A	RK 1M 1/6W J
R109	0B09673A	RK 680 1/6W J
R110	0B22201A	RM 562 1/6W F
R111	0B22229A	RM 1.00K 1/6W F
R112,113	0B22275A	RM 2.67K 1/6W F
R114	0B22285A	RM 3.24K 1/6W F
R115	0B22294A	RM 3.83K 1/6W F
R116,117	0B22315A	RM 5.62K 1/6W F
R118	0B09523A	RM 13.7K 1/4W F
R119	0B22380A	RM 22.1K 1/6W F
R120,121	0B09677A	RK 1K 1/6W J
R122	0B09733A	RK 220K 1/6W J
R201,202	0B09717A	RK 47K 1/6W J
R203	0B09709A	RK 22K 1/6W J
R204	0B09749A	RK 1M 1/6W J
R205	0B09725A	RK 100K 1/6W J
R206	0B09698A	RK 7.5K 1/6W J
R207	0B09700A	RK 9.1K 1/6W J
R208	0B09749A	RK 1M 1/6W J
R209	0B09673A	RK 680 1/6W J
R210	0B22201A	RM 562 1/6W F
R211	0B22229A	RM 1.00K 1/6W F
R212,213	0B22275A	RM 2.67K 1/6W F
R214	0B22285A	RM 3.24K 1/6W F
R215	0B22294A	RM 3.83K 1/6W F
R216,217	0B22315A	RM 5.62K 1/6W F
R218	0B09523A	RM 13.7K 1/4W F
R219	0B22380A	RM 22.1K 1/6W F
R220,221	0B09677A	RK 1K 1/6W J
R222	0B09733A	RK 220K 1/6W J
R301,302	0B24156A	RF 62 1/4W J
R303	0B09148A	CE 10μ 25V (LN)
C101	0B09404A	CPP 1000P 100V J
C103	0B41133A	CPP 2200P 100V G
C104,105	0B09792A	CC 33P 50V J
C107,108	0B09393A	CC 68P 50V J
C109	0B41139A	CPP 3900P 100V G
C110	0B41143A	CPP 5600P 100V G
C111	0B05557A	CML 0.015μ 50V J
C112	0B05682A	CML 0.068μ 50V J
C113	0B41300A	CMM 0.15μ 50V J
C114	0B05813A	CML 0.056μ 50V J
C115	0B41302A	CMM 0.22μ 50V J
C116	0B09876A	CMM 0.47μ 50V J
C117	0B09187A	CE 1μ 50V (BP)
C118,119	0B05681A	CML 0.01μ 50V J
C120	0B40473A	CE 10μ 16V (BP)
C121	0B41388A	CPP 120P 50V J
C122	0B40473A	CE 10μ 16V (BP)
C123,124	0B09148A	CE 10μ 25V (LN)
C201	0B09404A	CPP 1000P 100V J
C203	0B41133A	CPP 2200P 100V G
C204,205	0B09792A	CC 33P 50V J
C207,208	0B09393A	CC 68P 50V J
C209	0B41139A	CPP 3900P 100V G
C210	0B41143A	CPP 5600P 100V G
C211	0B05557A	CML 0.015μ 50V J
C212	0B05682A	CML 0.068μ 50V J
C213	0B41300A	CMM 0.15μ 50V J
C214	0B05813A	CML 0.056μ 50V J
C215	0B41302A	CMM 0.22μ 50V J
C216	0B09876A	CMM 0.47μ 50V J
C217	0B09187A	CE 1μ 50V (BP)
C218,219	0B05681A	CML 0.01μ 50V J
C220	0B40473A	CE 10μ 16V (BP)
C221	0B41388A	CPP 120P 50V J
C222	0B40473A	CE 10μ 16V (BP)
C223,224	0B01391A	CE 220μ 25V
C301,302	0B01674A	CE 10μ 25V
C303	0B81634A	2P-T Post
CN33	0B81635A	3P-T Post
CN39,40		
		— Rec. Level —
IC305	0B11027A	IC TC9145P
Q101	0B10033A	TR 2SC1740S
Q201	0B10033A	TR 2SC1740S
D101	0B06398A	SiD 1SS176
D201	0B06398A	SiD 1SS176
VR101,102	0B32127A	Semi VR 10K
VR103	0B32128A	Semi VR 20K
VR201,202	0B32127A	Semi VR 10K
VR203	0B32128A	Semi VR 20K
R130	0B09689A	RK 3.3K 1/6W J
R131	0B09693A	RK 4.7K 1/6W J
R132	0B09697A	RK 6.8K 1/6W J
R133,134	0B09701A	RK 10K 1/6W J
R135	0B09701A	RK 10K 1/6W J
R136	0B09705A	RK 15K 1/6W J
R137	0B09711A	RK 27K 1/6W J
R138	0B05615A	RK 22K 1/4W J
R139	0B09749A	RK 1M 1/6W J
R140	0B22326A	RM 6.98K 1/6W F
R142	0B09709A	RK 22K 1/6W J
R230	0B09689A	RK 3.3K 1/6W J
R231	0B09693A	RK 4.7K 1/6W J
R232	0B09697A	RK 6.8K 1/6W J
R233,234	0B09701A	RK 10K 1/6W J
R235	0B09701A	RK 10K 1/6W J
R236	0B09705A	RK 15K 1/6W J
R237	0B09711A	RK 27K 1/6W J
R238	0B05615A	RK 22K 1/4W J
R239	0B09749A	RK 1M 1/6W J
R240	0B22326A	RM 6.98K 1/6W F
R242	0B09709A	RK 22K 1/6W J
R310,311	0B09693A	RK 4.7K 1/6W J
R312	0B01888A	RK 10K 1/4W J
C130	0B09322A	CPP 330P 100V J
C131	0B09591A	CPP 0.01μ 100V J
C132	0B05659A	CML 5600P 50V J
C133	0B05687A	CML 1200P 50V J
C230	0B09322A	CPP 330P 100V J
C231	0B09591A	CPP 0.01μ 100V J
C232	0B05659A	CML 5600P 50V J
C233	0B05687A	CML 1200P 50V J
C361	0B01863A	CE 3.3μ 50V
		— Rec. Amp. —
IC306	0B06387A	IC NJM2043DD
Q110,111	0B06299A	TR 2SC2878
Q112	0B10033A	TR 2SC1740S
Q210,211	0B06299A	TR 2SC2878
Q212	0B10033A	TR 2SC1740S
D110,111	0B06398A	SiD 1SS176
D112	0B06398A	SiD 1SS176
D210,211	0B06398A	SiD 1SS176
D212	0B06398A	SiD 1SS176
L105	0B51260A	L-C Block 42-5025
L106	0B51258A	Trap Coil 1.05mH
L205	0B51260A	L-C Block 42-5025
L206	0B51258A	Trap Coil 1.05mH
R150	0B09681A	RK 1.5K 1/6W J
R151	0B09675A	RK 820 1/6W J
R153	0B09703A	RK 12K 1/6W J
R154,155	0B09701A	RK 10K 1/6W J
R156	0B09709A	RK 22K 1/6W J
R157	0B09713A	RK 33K 1/6W J
R158	0B09733A	RK 220K 1/6W J
R159	0B05936A	RK 10 1/4W J
R160	0B22229A	RM 1.00K 1/6W F
R161	0B22248A	RM 1.54K 1/6W F
R162	0B22296A	RM 3.92K 1/6W F
R163	0B22431A	RM 59.0K 1/6W F
R164	0B09733A	RK 220K 1/6W J
R250	0B09681A	RK 1.5K 1/6W J
R251	0B09675A	RK 820 1/6W J
R253	0B09703A	RK 12K 1/6W J
R254,255	0B09701A	RK 10K 1/6W J
R256	0B09709A	RK 22K 1/6W J
R257	0B09713A	RK 33K 1/6W J
R258	0B09733A	RK 220K 1/6W J
R259	0B05936A	RK 10 1/4W J
R260	0B22229A	RM 1.00K 1/6W F
R261	0B22248A	RM 1.54K 1/6W F
R262	0B22296A	RM 3.92K 1/6W F
R263	0B22431A	RM 59.0K 1/6W F
R264	0B09733A	RK 220K 1/6W J
C140	0B09322A	CPP 330P 100V J
C141	0B09270A	CPP 470P 100V J
C142	0B09834A	CPP 2200P 100V J
C143	0B05687A	CML 1200P 50V J
C144	0B09828A	CPP 8200P 100V J
C145	0B05685A	CML 0.082μ 50V J
C146	0B09814A	CE 1μ 50V (LN)
C147	0B40154A	CE 47μ 16V (LN)
C240	0B09322A	CPP 330P 100V J
C241	0B09270A	CPP 470P 100V J
C242	0B09834A	CPP 2200P 100V J
C243	0B05687A	CML 1200P 50V J
C244	0B09828A	CPP 8200P 100V J
C245	0B05685A	CML 0.082μ 50V J
C246	0B09814A	CE 1μ 50V (LN)
C247	0B40154A	CE 47μ 16V (LN)
C315,316	0B40154A	CE 47μ 16V (LN)
CN12	0B81761A	4P-T Post
TP1,2	0B81761A	4P-T Post
TP3,4	0B81761A	4P-T Post
		— Meter Amp. —
Q121	0B06142A	TR 2SC2240 (BL)
Q122,123	0B10033A	TR 2SC1740S
Q221	0B06142A	TR 2SC2240 (BL)
Q222,223	0B10033A	TR 2SC1740S
ZD101	0B06230A	ZD 5.1V RD5.1EB2
ZD201	0B06230A	ZD 5.1V RD5.1EB2
D120,121	0B06398A	SiD 1SS176
D122	0B12584A	SiD 1N4148
D220,221	0B06398A	SiD 1SS176
D222	0B12584A	SiD 1N4148
D301	0B06398A	SiD 1SS176
VR118	0B32130A	Semi VR 100K
VR218	0B32130A	Semi VR 100K
R701	0B09709A	RK 22K 1/6W J
R702	0B09705A	RK 15K 1/6W J
R703,704	0B09719A	RK 56K 1/6W J
R705,706	0B09725A	RK 100K 1/6W J
R707	0B09725A	RK 100K 1/6W J
R708	0B05692A	RK 68K 1/4W J
R709	0B05776A	RK 1M 1/4W J
R751	0B09749A	RK 1M 1/6W J
R801	0B09709A	RK 22K 1/6W J
R802	0B09705A	RK 15K 1/6W J
R803	0B09719A	RK 56K 1/6W J
R804	0B05508A	RK 56K 1/4W J
R805,806	0B09725A	RK 100K 1/6W J
R807	0B09725A	RK 100K 1/6W J
R808	0B05692A	RK 68K 1/4W J
R809	0B05776A	RK 1M 1/4W J
R851	0B09749A	RK 1M 1/6W J
C180	0B09148A	CE 10μ 25V (LN)
C181	0B01780A	CML 0.1μ 50V J
C280	0B09148A	CE 10μ 25V (LN)
C281	0B01780A	CML 0.1μ 50V J
CN8	0B81763A	6P-T Post
CN32	0B83137A	2P Connector
CN36	0B83141A	2P Connector
CN37	0B83142A	2P Connector
		— Headphone Amp. —
IC320	0B06370A	IC NJM4556D
Q125	0B06299A	TR 2SC2878
Q225	0B06299A	TR 2SC2878
D310	0B06398A	SiD 1SS176
R715	0B09693A	RK 4.7K 1/6W J
R716	0B01889A	RK 100K 1/4W J
R717	0B09725A	RK 100K 1/6W J
R718	0B24155A	RF 12 1/4W J
R815	0B09693A	RK 4.7K 1/6W J
R816	0B01889A	RK 100K 1/4W J
R817	0B09725A	RK 100K 1/6W J
R818	0B24155A	RF 12 1/4W J
C330,331	0B01403A	CE 47μ 16V
		— Bias Osc. —
Q301	0B06202A	TR 2SA562TM (Y)
Q302	0B10029A	TR 2SA933S
D302	0B06398A	SiD 1SS176
L301	0B51256A	Bias Osc. B01-JF
VR115	0B32127A	Semi VR 10K
VR116	0B32128A	Semi VR 20K
VR117	0B32129A	Semi VR 50K
VR215	0B32127A	Semi VR 10K
VR216	0B32128A	Semi VR 20K
VR217	0B32129A	Semi VR 50K
R330	0B09669A	RK 470 1/6W J
R331,332	0B09693A	RK 4.7K 1/6W J
R333,334	0B09701A	RK 10K 1/6W J
R336	0B05622A	RK 2.2K 1/4W J
R337	0B09721A	RK 68K 1/6W J
R338,339	0B09725A	RK 100K 1/6W J
R341,342	0B09733A	RK 220K 1/6W J
R343	0B09737A	RK 220K 1/6W J
R344	0B24158A	RF 10 1W J
R345	0B24159A	RF 22 1W J
R353	0B09717A	RK 47K 1/6W J
R360	0B09711A	RK 27K 1/6W J
R361,362	0B09725A	RK 100K 1/6W J
R720	0B09653A	RK 100 1/6W J
R721	0B09697A	RK 6.8K 1/6W J
R722	0B09705A	RK 15K 1/6W J
R820	0B09653A	RK 100 1/6W J
R821	0B09697A	RK 6.8K 1/6W J
R822	0B09705A	RK 15K 1/6W J
C335	0B01403A	CE 47μ 16V
C336	0B41255A	CPP 0.018μ 100V J
C337	0B05550A	CML 1000P 50V J
C338	0B09148A	CE 10μ 25V (LN)
C370,371	0B01780A	CML 0.1μ 50V J
CN10	0B81759A	2P-T Post
CN41	0B81759A	2P-T Post
CN42	0B81635A	3P-T Post
CN51	0B81773A	Receptacle 2P
CN51	0B81774A	Header 2P
CN52	0B81773A	Receptacle 2P
CN52	0B81775A	Header 3P
		— Switch —
Q016	0B10062A	TR DTC144ES R1,R2=47K
R055	0B01857A	RK 1K 1/4W J
R069	0B01888A	RK 10K 1/4W J
R346,347	0B05794A	RK 680 1/4W J
R348,349	0B01888A	RK 10K 1/4W J
R350,351	0B09709A	RK 22K 1/6W J
R354	0B09701A	RK 10K 1/6W J
R363,364	0B01888A	RK 10K 1/4W J
R382	0B05794A	RK 680 1/4W J
C350,351	0B40083A	CE 2200μ 16V
C353	0B01409A	CE 47μ 25V
C372	0B01780A	CML 0.1μ 50V J
SW001	0B70121A	Push Switch SPUJ19
SW301	0B70114A	Push Switch SPUJ42
SW302	0B70113A	Push Switch SPUJ32
SW303	0B70122A	Push Switch SPUL12
CN30	0B83135A	6P Connector
CN43	0B81635A	3P-T Post
CN44	0B81117A	1P Contact Pin
	0J05418B	P.C.B. Holder (1)
	0J05575A	Rivet 3x3.5 (2)
		— Logic —
IC603	0B11020A	IC TMP4315BP-1814
IC604	0B06368A	IC LM6416E-106
IC605	0B06317A	IC μPD4030BC
IC606	0B06214A	IC μPD4071BC
IC607	0B11369A	IC TA64
IC608	0B11368A	IC LB1649
Q602,603	0B10007A	TR 2SC3399
Q604	0B10007A	TR 2SC3399
Q605	0B06299A	TR 2SC2878
Q606	0B10003A	TR 2SA1345
Q608,609	0B10033A	TR 2SC1740S
Q610,611	0B10033A	TR 2SC1740S
Q612,613	0B10033A	TR 2SC1740S
Q614,615	0B10029A	TR 2SA933S
Q616,617	0B10029A	TR 2SA933S
Q618,619	0B06013A	TR 2SA733 (P,Q)
Q620,621	0B01872A	TR 2SC945L (P,Q)
Q622	0B01872A	TR 2SC945L (P,Q)
Q625	0B10033A	TR 2SC1740S
Q626	0B10029A	TR 2SA933S
Q628	0B10029A	TR 2SA933S
Q634	0B10097A	TR 2SA952 (K,L)
ZD403	0B12179A	ZD 15V RD15JS-T1B1
ZD601	0B12167A	ZD 10V RD10JS-T1B1
ZD603	0B12150A	ZD 5.6V RD5.6JS-T1B2
ZD604	0B12153A	ZD 6.2V RD6.2JS-T1B2
D608	0B06398A	SiD 1SS176
D609,610	0B06398A	SiD 1SS176
D611,612	0B06398A	SiD 1SS176
D613	0B06398A	SiD 1SS176
D614,615	0B12584A	SiD 1N4148
D617	0B06398A	SiD 1SS176
D618,619	0B06398A	SiD 1SS176
D620,621	0B06398A	SiD 1SS176
D622,623	0B06398A	SiD 1SS176
D624,625	0B06398A	SiD 1SS176
D626	0B12584A	SiD 1N4148
D627,628	0B06398A	SiD 1SS176
D629,630	0B06398A	SiD 1SS176
D631,632	0B06398A	SiD 1SS176
D633,634	0B06398A	SiD 1SS176
D641	0B06398A	SiD 1SS176
L601	0B51263A	L-C Block BLK
L602	0B24150A	Coil Resistor 5
VR601	0B32123A	Semi VR 500
R419	0B09669A	RK 470 1/6W J
R601,602	0B09677A	RK 1K 1/6W J
R603	0B09677A	RK 1K 1/6W J
R604	0B09717A	RK 47K 1/6W J
R605	0B05641A	RK 47K 1/4W J
R606	0B09717A	RK 47K 1/6W J
R607	0B05641A	RK 47K 1/4W J
R608,609	0B09717A	RK 47K 1/6W J
R610	0B09729A	RK 150K 1/6W J
R611	0B24160A	RF 15 2W J
R612	0B09677A	RK 1K 1/6W J
R613	0B09717A	RK 47K 1/6W J
R615	0B05641A	RK 47K 1/4W J
R616	0B09693A	RK 4.7K 1/6W J
R618,619	0B09701A	RK 10K 1/6W J
R620	0B09701A	RK 10K 1/6W J
R621	0B09693A	RK 4.7K 1/6W J
R623	0B09677A	RK 1K 1/6W J
R632	0B09701A	RK 10K 1/6W J
R633	0B09677A	RK 1K 1/6W J
R634,635	0B09693A	RK 4.7K 1/6W J
R636	0B09693A	RK 4.7K 1/6W J
R637	0B09671A	RK 560 1/4W J
R638,639	0B05575A	RK 560 1/4W J
R640	0B05575A	RK 560 1/4W J
R641	0B09687A	RK 2.7K 1/6W J
R642,643	0B09701A	RK 10K 1/6W J
R644,645	0B09701A	RK 10K 1/6W J
R646,647	0B09701A	RK 10K 1/6W J
R649	0B01888A	RK 10K 1/4W J
R650,651	0B09701A	RK 10K 1/6W J
R652	0B09701A	RK 10K 1/6W J
R654,655	0B09725A	RK 100K 1/6W J
R656,657	0B09725A	RK 100K 1/6W J
R658	0B05576A	RK 470 1/4W J
R659	0B09725A	RK 100K 1/6W J
R661,662	0B09713A	RK 33K 1/6W J
R663,664	0B09717A	RK 47K 1/6W J
R665	0B09717A	RK 47K 1/6W J
R666	0B09664A	RK 300 1/6W J
R667,668	0B09717A	RK 47K 1/6W J
R669,670	0B09717A	RK 47K 1/6W J
R671,672	0B05625A	RK 220K 1/4W J
R673	0B05625A	RK 220K 1/4W J
R674	0B09733A	RK 220K 1/6W J
R675,676	0B09737A	RK 330K 1/6W J
R677,678	0B09737A	RK 330K 1/6W J
R679	0B09701A	RK 10K 1/6W J
R680	0B09749A	RK 1M 1/6W J
R681	0B09735A	RK 270K 1/6W J
R682	0B09611A	RK 1.8 1/6W J
R683	0B09623A	RF 5.6 1/6W J
R684	0B09669A	RK 470 1/6W J
R685	0B09689A	RK 3.3K 1/6W J
R686	0B09697A	RK 6.8K 1/6W J
R687	0B09689A	RK 3.3K 1/6W J
R688	0B09707A	RK 18K 1/6W J
R689	0B09719A	RK 56K 1/6W J
R690	0B09721A	RK 68K 1/6W J
R691	0B09681A	RK 1.5K 1/6W J
R692,693	0B09713A	RK 33K 1/6W J
R694	0B09713A	RK 33K 1/6W J
R695	0B09695A	RK 5.6K 1/6W J
R696,697	0B09670A	RK 510 1/6W J
R698	0B01857A	RK 1K 1/4W J
R699	0B09677A	RK 1K 1/6W J
R936,937	0B09701A	RK 10K 1/6W J
C415	0B01403A	CE 47μ 16V
C601,602	0B09223A	CE 1μ 50V (LN)
C603	0B09223A	CE 1μ 50V (LN)
C604	0B09327A	CE 0.33μ 50V (LN)
C605	0B09222A	CE 0.47μ 50V (LN)
C606	0B09332A	CE 2.2μ 50V (LN)
C607	0B09148A	CE 10μ 25V (LN)
C608,609	0B09150A	CE 33μ 25V (LN)
C610	0B01412A	CE 10μ 16V
C611	0B05841A	CE 330μ 10V
C612	0B40079A	CE 220μ 16V
C613,614	0B09286A	CC 470P 50V K
C615	0B09290A	CC 0.01μ 50V Z
C616	0B05557A	CML 0.015μ 50V J
C617	0B05892A	CC 100P 50V K
C619	0B01403A	CE 47μ 16V
C620,621	0B01780A	CML 0.1μ 50V J
CN1	0B81762A	5P-T Post
CN2	0B81766A	9P-T Post
CN3	0B81764A	7P-T Post
CN4	0B81763A	6P-T Post
CN5	0B81762A	5P-T Post
CN6	0B81764A	7P-T Post
CN7	0B81763A	6P-T Post
CN22	0B81759A	2P-T Post
CN31	0B83136A	4P Connector
	0B81754A	8P DIN Socket (1)
		— Miscellaneous —
	0B60520A	Main P.C.B.
CN9	0B83118A	3P Connector
CN13	0B83129A	3P Ribbon Cable 220
CN14	0B82267A	4P Ribbon Cable 160
CN15	0B82149A	4P Ribbon Cable 100
CN17	0B83130A	6P Ribbon Cable 100
CN20	0B83165A	5P Ribbon Cable 160 (2)
CN23	0B82116B	2P Ribbon Cable 160
CN24	0B82193A	3P Ribbon Cable 220
CN35	0B81635A	3P-T Post
CN53	0B82078A	PD Connector V400
CJ	0B82065C	PD Connector V90
	0B80152B	Wire 120 mm BLK (1)
	0J05419A	VR Earth Plate (2)
	0V10050C	Wire 52mm BLK (2)

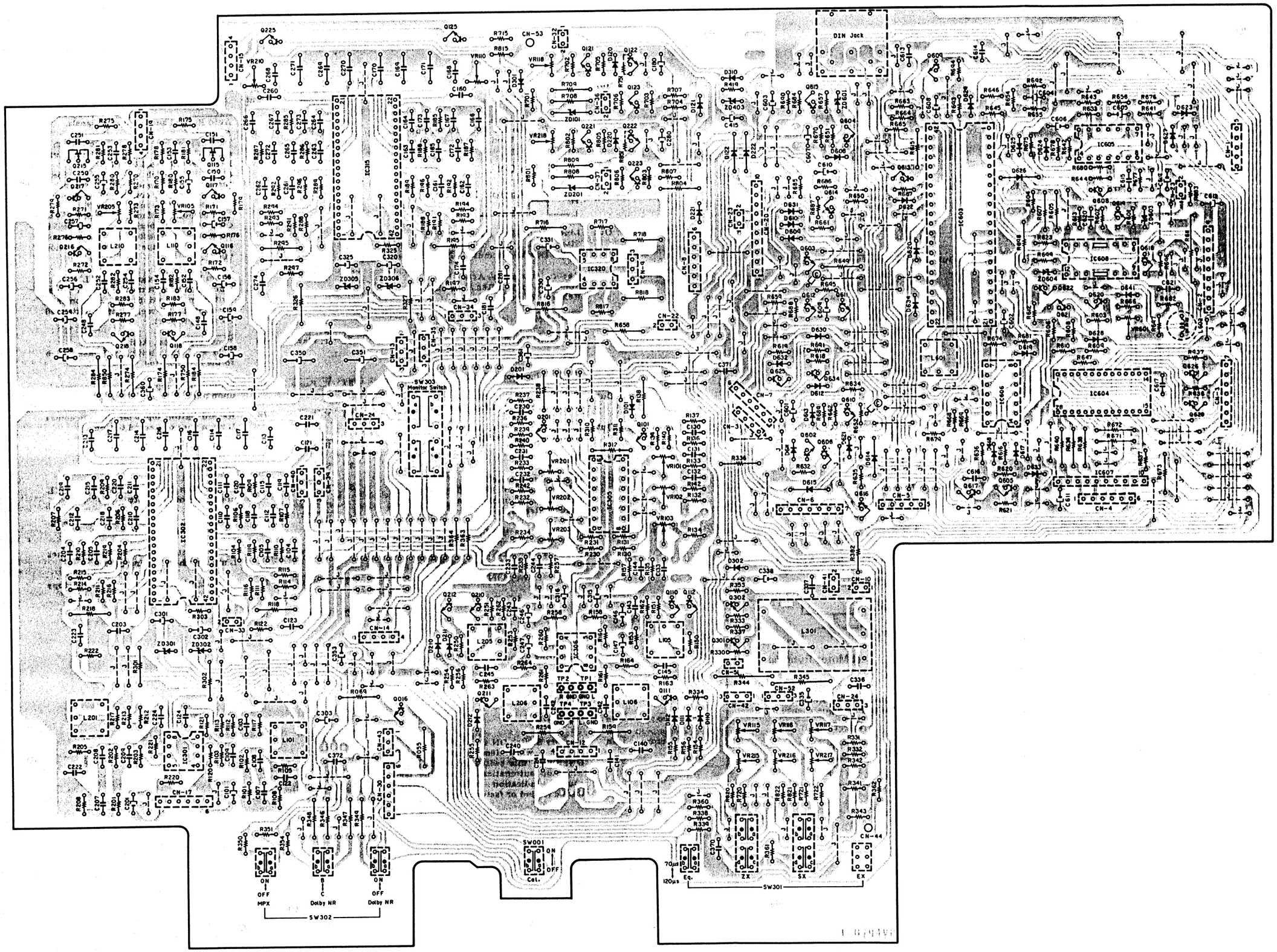
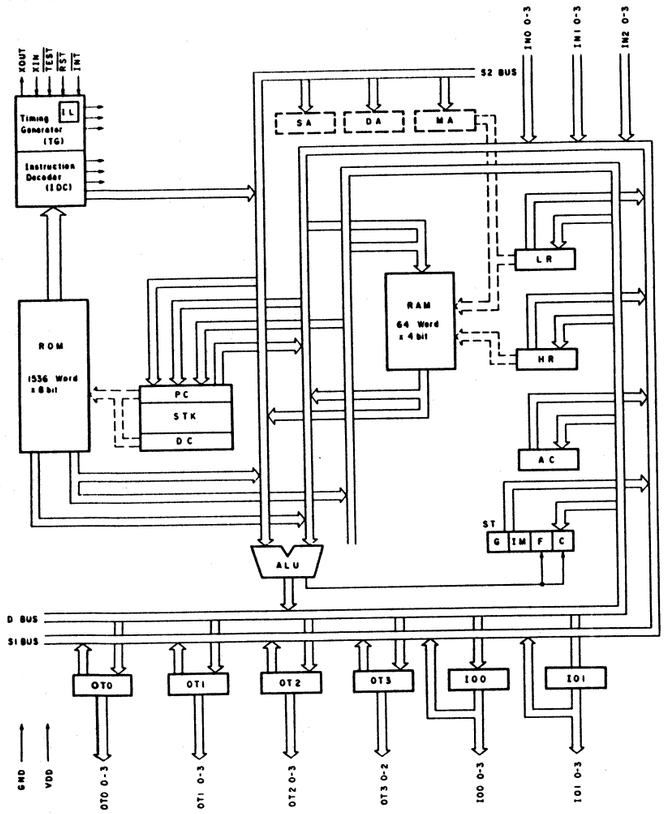
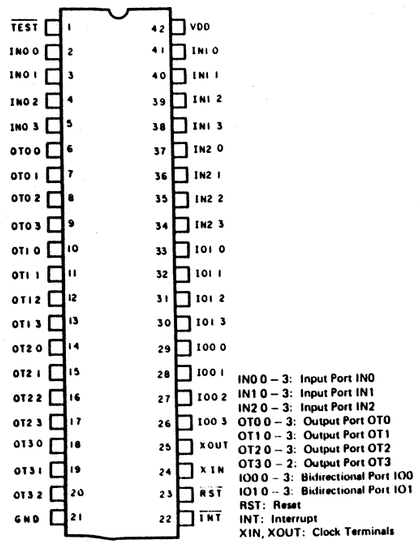


Fig. 8.13.2 Serial Nos.: A13101001 - 02450 (CR-4A)
A13150001 - 53800 (CR-4/4E/40)

9. SCHEMATIC DIAGRAMS

9.1. IC Block Diagrams

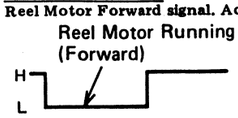
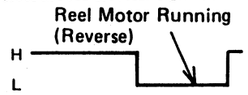
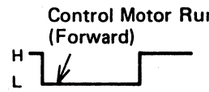
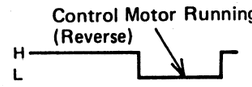
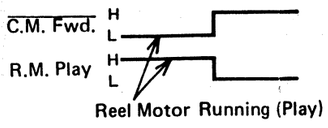
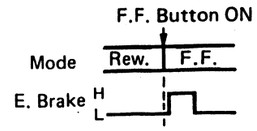
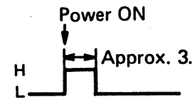
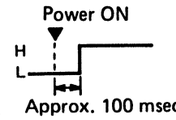




IN0 0 – 3: Input Port IN0
IN1 0 – 3: Input Port IN1
IN2 0 – 3: Input Port IN2
OT0 0 – 3: Output Port OT0
OT1 0 – 3: Output Port OT1
OT2 0 – 3: Output Port OT2
OT3 0 – 2: Output Port OT3
IO0 0 – 3: Bidirectional Port IO0
IO1 0 – 3: Bidirectional Port IO1
RST: Reset
INT: Interrupt
XIN, XOUT: Clock Terminals

Fig. 9.1.1 4-Bit Micro-processor TMP4315BP-1814

IC603 (TMP4315BP-1814)

Pin No.	Signal Name	In/ Out	Function
1	Test	—	Not used.
2	Cam (0)	In	Mechanism position detecting signals.
3	Cam (1)	In	Mechanism mode can be sensed according to states of Cam (0), Cam (1) and Cam (2).
4	Cam (2)	In	
5	$\overline{\text{Eject}}$	In	$\overline{\text{Eject}}$ signal. Active L. Used to detect whether the Cassette Case is open. When it is open, this signal is L. In this condition, the CR-4 is in Stop mode and no pushbutton operation is enabled.
6	$\overline{\text{R.M. Fwd.}}$	Out	$\overline{\text{Reel Motor Forward}}$ signal. Active L. 
7	$\overline{\text{R.M. Rev.}}$	Out	$\overline{\text{Reel Motor Reverse}}$ signal. Active L. 
8	$\overline{\text{C.M. Fwd.}}$	Out	$\overline{\text{Control Motor Forward}}$ signal. Active L. 
9	$\overline{\text{C.M. Rev.}}$	Out	$\overline{\text{Control Motor Reverse}}$ signal. Active L. 
10	R.M. Play	Out	Reel Motor Play signal. Active H. In Play mode, $\overline{\text{C.M. Fwd.}}$ becomes L, and R.M. Play becomes H. 
11	Capstan M	Out	Not used.
12	E. Brake	Out	Electric Brake signal. Active H. Generates H pulse upon change in mode. 
13	Source Mute	Out	Source Mute signal. Active H. Issues H pulse for 3.3 sec after power is turned ON. Used for timer recording circuit. 
14	Line Mute	Out	Line Output Mute signal. Active H. Stays at L only in Play or Rec./Play mode. Deactivates mute of line outputs.
15	Rec. Mute	Out	Record Mute signal. Active H. Stays at L only in Rec./Play mode. Releases record mute.
16	$\overline{\text{Rew. Mode}}$	Out	$\overline{\text{Rewind Mode}}$ signal. Active L.
17	$\overline{\text{F.F. Mode}}$	Out	$\overline{\text{F.F. Mode}}$ signal. Active L.
18	$\overline{\text{Pause Mode}}$	Out	$\overline{\text{Pause Mode}}$ signal. Active L. Used for lighting of Pause lamp.
19	$\overline{\text{Play Mode}}$	Out	$\overline{\text{Play Mode}}$ signal. Active L. Used for lighting of Play lamp.
20	$\overline{\text{Rec. Mode}}$	Out	$\overline{\text{Record Mode}}$ signal. Active L. Used for lighting of Record lamp.
21	Vss	In	GND.
22	$\overline{\text{INT}}$	In	$\overline{\text{Interrupt}}$ signal. Active L. Allows input of shut-off pulse train. Detects tape running, i.e., rotation of Take-up Reel Hub.
23	$\overline{\text{Reset}}$	In	$\overline{\text{Reset}}$ signal. Active L. Held at L for approx. 100 msec after power is turned ON. Upon change of this signal to H, IC603 starts operation. 
24	EXtal	In	External circuit for clock oscillation.
25	Xtal	In	Oscillating frequency = 550 kHz.
26	$\overline{\text{Rec.}}$	—	Not used.
27	AMS	—	Not used.
28	$\overline{\text{Zero}}$	In	Not used.
29	Memory	In	Memory Switch ON signal. Active H. Held at H when Memory switch is set to ON. (With this switch set to ON, tape will stop automatically when the tape counter indication "000" is reached during rewind or fast-forward.)
30	$\overline{\text{A. Rew.}}$	In	$\overline{\text{Auto Rewind}}$ and $\overline{\text{Auto Play}}$ signals. Active L. These signals are L when Timer switch is set to OFF and, at the same time, Auto Repeat swtich is set to ON. (With these signals set to L, auto repeat function is performed and the playback/ rewind cycle is continuously repeated between the tape end and the tape start. Furthermore, if Memory switch is set to ON, the playback/rewind cycle is continuously repeated between the tape end and the tape counter indication "000".)
31	$\overline{\text{A. Play}}$	In	
32	$\overline{\text{T. Rec.}}$	In	$\overline{\text{Timer Recording}}$ signal. Active L. When power is turned ON with Timer switch in Record position, becomes L for approx. 3.3 sec, causing unattended recording to start.
33	$\overline{\text{T. Play}}$	In	$\overline{\text{Timer Play}}$ signal. Active L. Held at L upon setting of Timer switch to the Play position.
34	$\overline{\text{K. Pause}}$	In	Pause button input terminal. Becomes L upon push of Pause button.
35	$\overline{\text{K. Rec.}}$	In	Record button input terminal. Becomes L upon push of Record button.
36	$\overline{\text{R. Mute}}$	—	Not used.
37	SEA	—	Not used.
38	$\overline{\text{K. Play}}$	In	Play button input terminal. Becomes L upon push of Play button.
39	$\overline{\text{K. F.F.}}$	In	F.F. button input terminal. Becomes L upon push of F.F. button.
40	$\overline{\text{K. Rew.}}$	In	Rewind button input terminal. Becomes L upon push of Rewind button.
41	$\overline{\text{K. Stop}}$	In	Stop signal input terminal. At L, stops all operations.
42	VDD	In	+5 V.

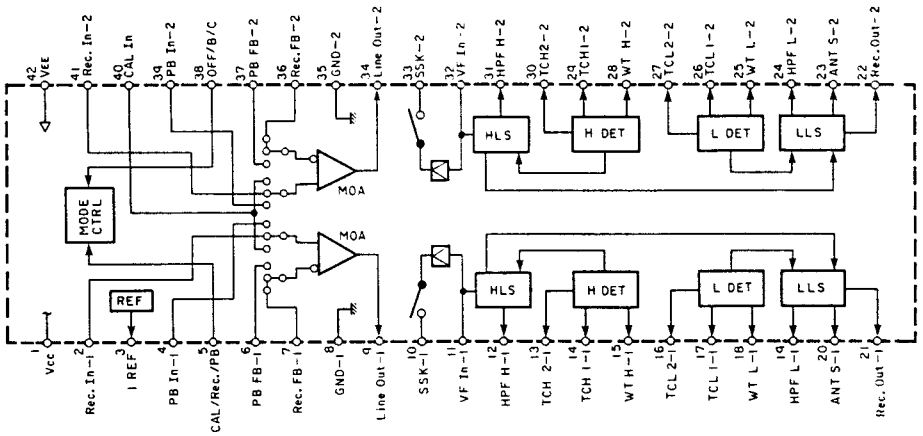
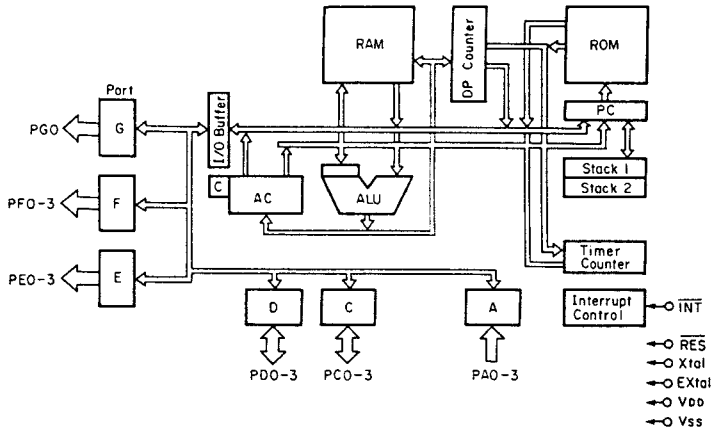


Fig. 9.1.3 Dolby NR IC CX20188

IC302/IC315 (CX20188)

Pin No.	Signal Name	Function
1	Vcc	Positive power supply input terminal.
2,41	Rec. In	Record signal input terminal.
3	I Ref.	Reference current input terminal.
4,39	PB In	PB signal input terminal.
5	CAL/Rec./ PB	Calibration/Recording/Playback select terminal.
6,37	PB FB	Playback signal feedback terminal.
7,36	Rec. FB	Record signal feedback terminal.
8,35	GND	GND terminal.
9,34	Line Out	Line signal (decoded signal) output terminal.
10,33	SSK	Spectral skewing switch terminal.
11,32	VF In	Encode circuit input terminal.
12,31	HPF H	HLS high-pass filter terminal.
13,30	TCH 2	HLS detector time constant determination terminal 2.
14,29	TCH 1	HLS detector time constant determination terminal 1.
15,28	WT H	HLS weighting terminal.
16,27	TCL 2	LLS detector time constant determination terminal 2.
17,26	TCL 1	LLS detector time constant determination terminal 1.
18,25	WT L	LLS weighting terminal.
19,24	HPF L	LLS high-pass filter terminal.
20,23	ANT S	Anti-saturation terminal.
21,22	Rec. Out	Record signal (encoded signal) output terminal.
38	OFF/B/C	Dolby NR OFF/B-type/C-type select terminal.
40	CAL In	Calibration input terminal. Not used.
42	V_{EE}	Negative power supply input terminal.



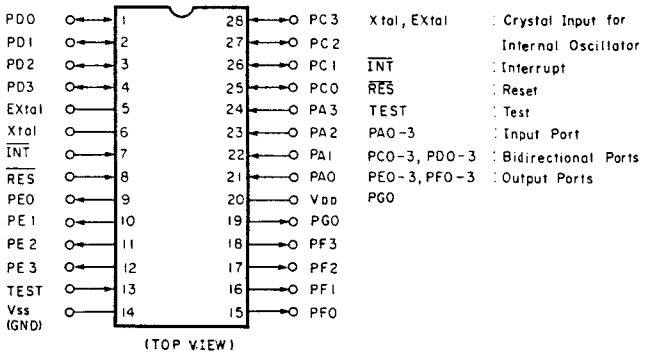
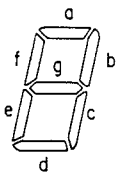


Fig. 9.1.2 4-Bit Micro-processor LM6416E-106

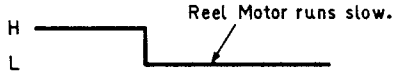
IC604 (LM6416E-106)

Pin No.	Signal Name	In/ Out	Function
1	CLR	In	Reset button input terminal. Upon push of Reset button, Reset signal becomes L and counter is cleared to "0000".
2	K. Play	In	Play button input terminal. Becomes L upon push of Play button.
3	K. F.F.	In	F.F. button input terminal. Becomes L upon push of F.F. button.
4	K. Rew.	In	Rewind button input terminal. Becomes L upon push of Rewind button.
5	EXtal	In	Terminals for clock oscillation. RC circuit is
6	Xtal	In	connected.
7	INT	In	Interrupt signal. Active L. Shut-off pulse train is input. Input pulse train is counted for tape counter display.
8	Reset	In	Reset signal. Active L. Held at L for approx. 100 msec after power is turned ON.
9	f		Display segment drive signals.
10	b	Out	Segment lights at L.
11	a		
12	d		

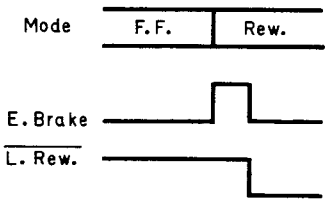


13	Test	In	Not used.
14	Vss	In	GND.
15	g		Display segment drive signals.
16	a	Out	Segment lights at L.
17	c		
18	D4	Out	The 4th (rightmost) digit select signal. Active L.

Pin No.	Signal Name	In/ Out	Function
19	Motor Slow	Out	Motor Slow signal. Active L. When Motor Slow signal is L, reel motor speed is reduced.



20	V_{DD}	In	+5 V
21	L. Rew.	In	LED Rewind signal. Active L. When mode is changed to Rewind, L. Rew. signal becomes L after H period of E. Brake signal ended.



22	L. F.F.	In	LED F.F. signal. Active L. Timing is similar to L. Rew. signal.
23	L. Stop	In	LED Stop signal. Active L. Timing is similar to L. Rew. signal.
24	Memory Stop	In	Memory Stop switch input terminal of Memory Stop/Auto Repeat switch. Memory Stop signal is L when Memory Stop is selected.
25	Memory Play	In	Not used.
26	D3		The 3rd, 2nd, and 1st (leftmost) digit select
27	D2	Out	signals. Active L.
28	D1		

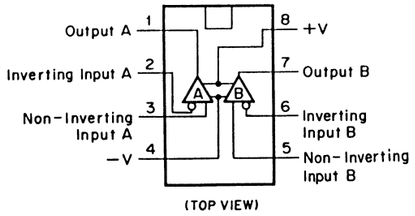


Fig. 9.1.4 Operational Amp. IC 4556D, 4558D, 4560M, 2043DD, 2403D, 072DE

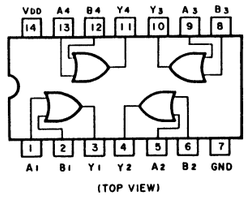


Fig. 9.1.5 OR Gate C-MOS IC μPD4071BC

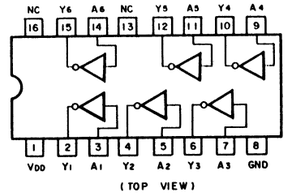


Fig. 9.1.9 Inverter C-MOS IC LC4049B

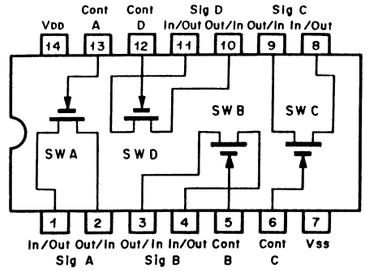


Fig. 9.1.10 Bilateral Switch μPD4066BC

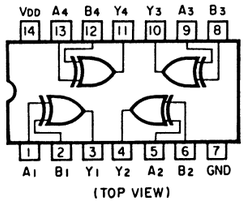


Fig. 9.1.6 Exclusive OR Gate C-MOS IC μPD4030BC

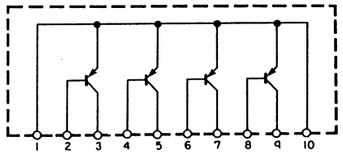
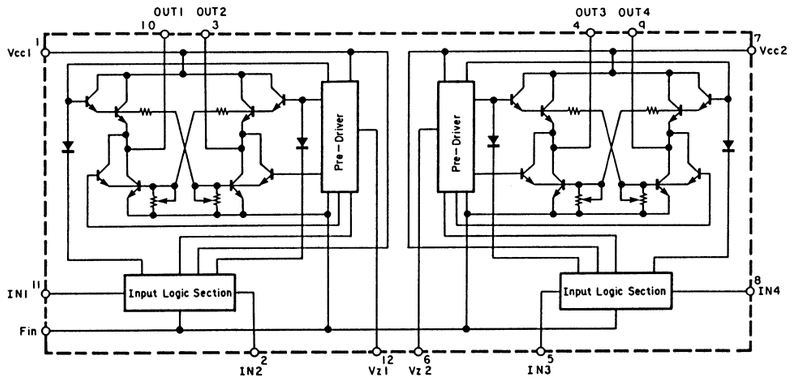


Fig. 9.1.7 Transistor Array TA64



INPUT IN1/3	INPUT IN2/4	OUTPUT OUT1/3	OUTPUT OUT2/4	OPERATION
0	0	0	0	Braking
1	0	1	0	Forward (Reverse)
0	1	0	1	Reverse (Forward)
1	1	0	0	Braking

Fig. 9.1.8 Motor Driver IC LB1649

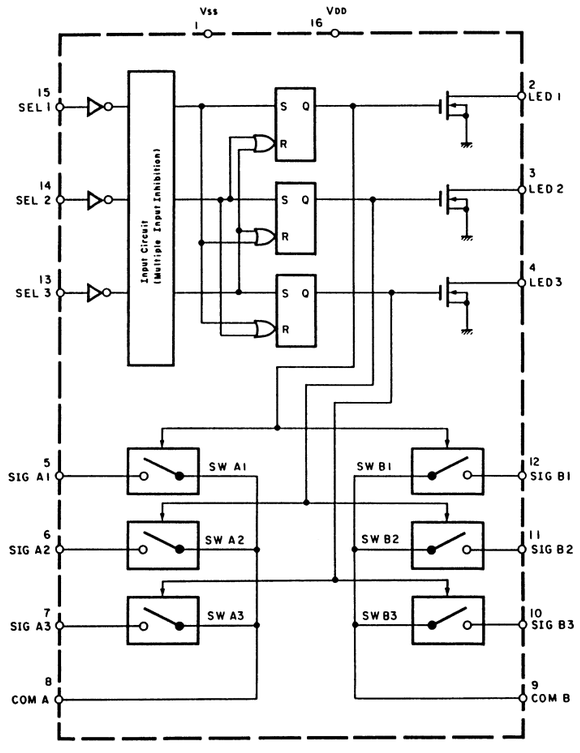


Fig. 9.1.11 Analog Switch Selector TC9145P

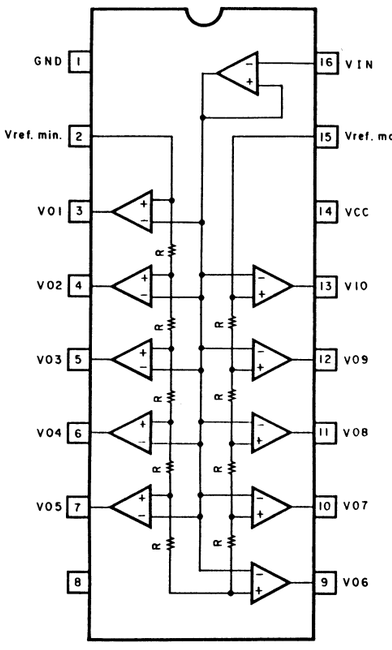


Fig. 9.1.12 Level Meter Driver TA7612AP

9.2. Schematic Diagrams

(1) For Serial No.: A13102451 - (CR-4A)/A13153801 - (CR-4/4E/40)

CR-4/4A/4E/40

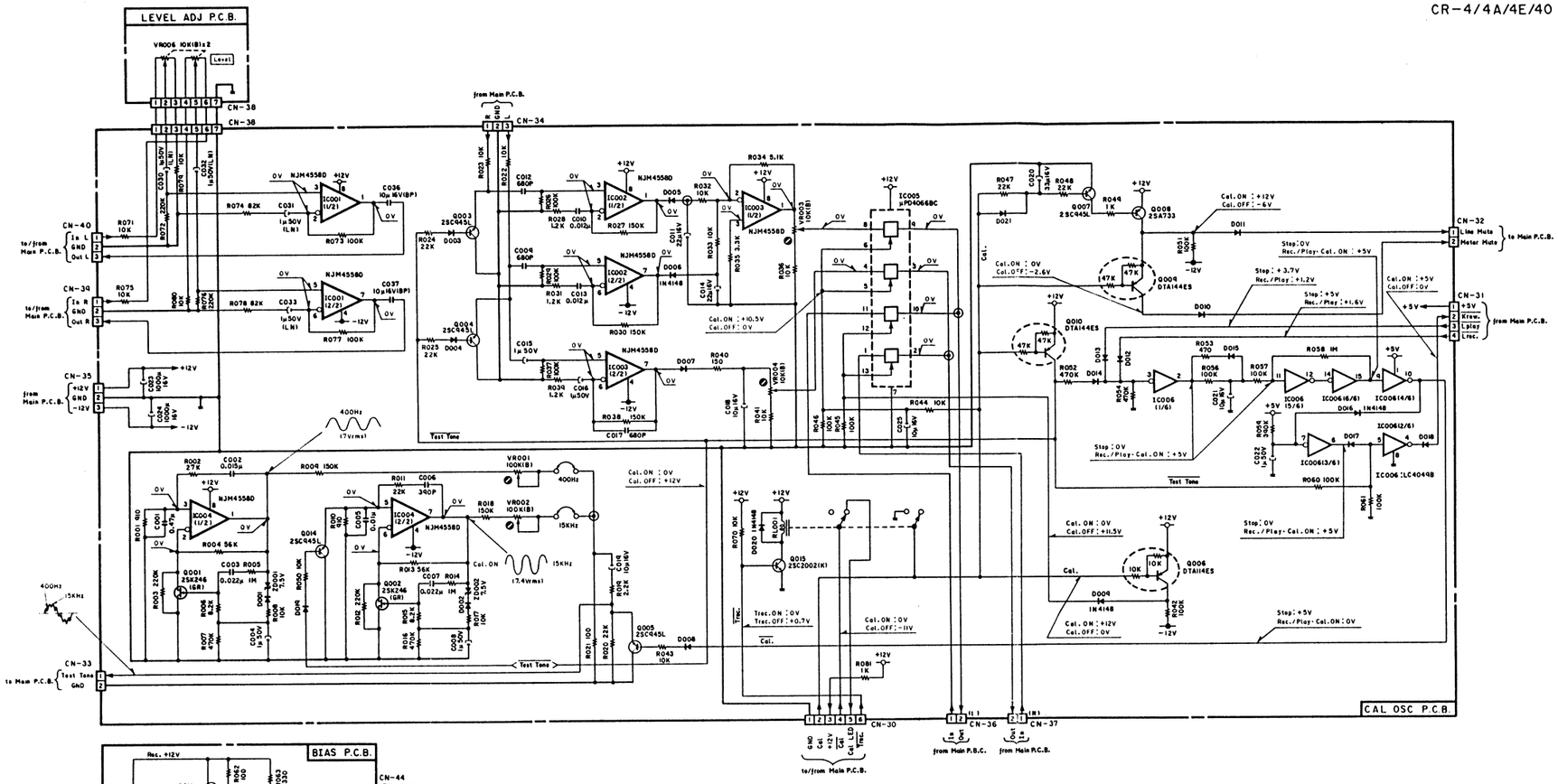
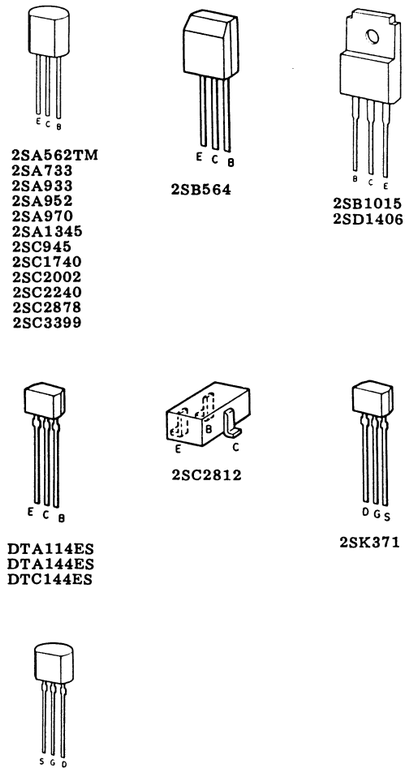


Fig. 9.2.1.1 Serial No.: A13102451 - (CR-4A)
A13153801 - (CR-4/4E/40)



WARNING:

Parts marked with the symbol ⚠ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

CAUTION:

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.
WARNING — DO NOT return the unit to the customer until the problem is located and corrected.

Notes:

1. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
2. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.
3. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.
4. Voltage measuring condition:
   - Stop mode (with no input signal) unless otherwise specified.
   - Tape: SX position, Eq.: 70 μs
   - Monitor Switch: Tape
   - Timer Switch: OFF
   - Memory Stop/Auto Repeat Switch: OFF
   - MPX Switch: OFF
   - Dolby NR Switch: OFF
   - Cal. Switch: OFF
   - Play mode: Cassette with no tape played back.
5. ➡: Indicates record signal flow.
   ⇨: Indicates playback signal flow.

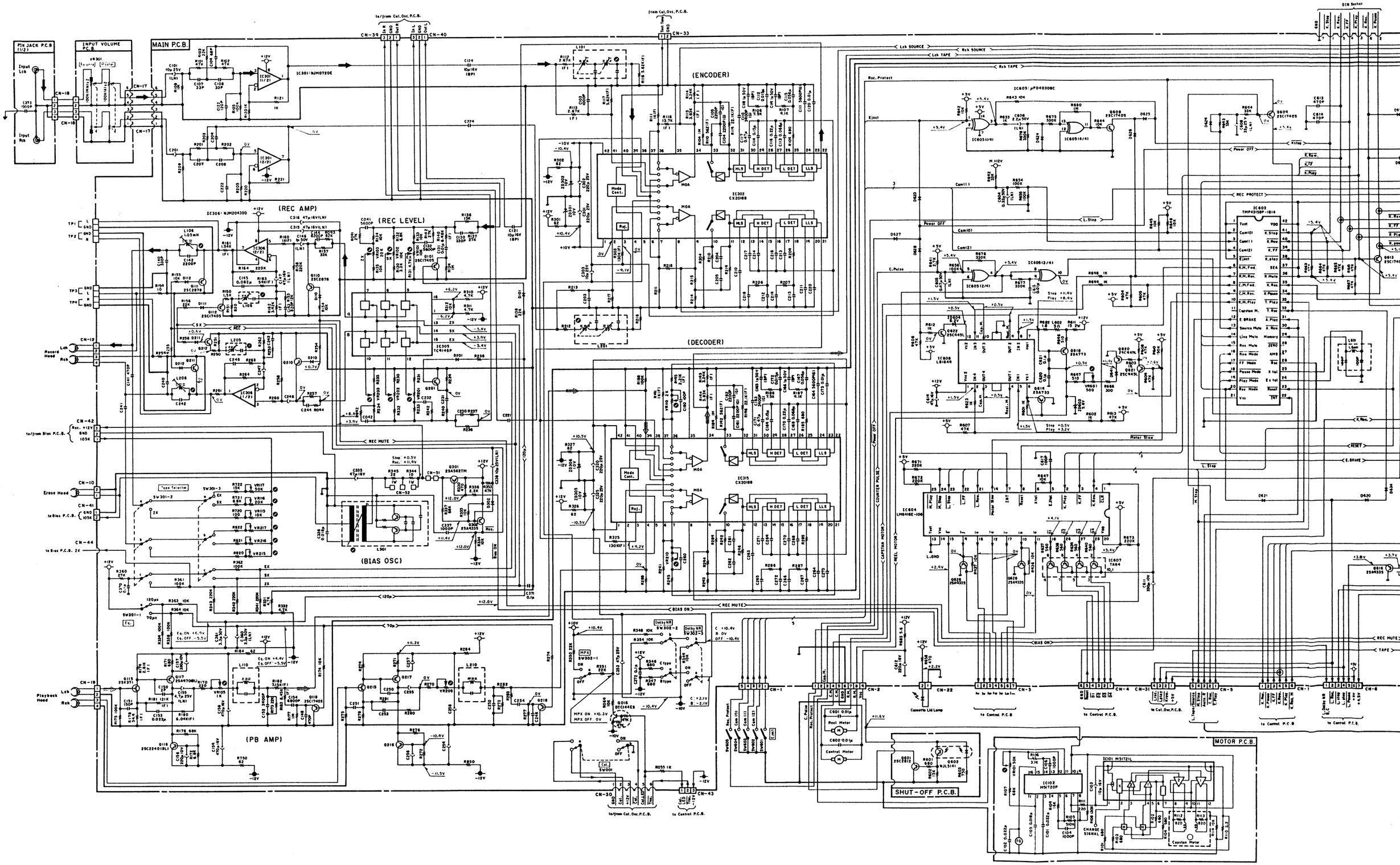


Fig. 9.2.1.2 Serial No.: A13102451 - (CR-4A)
A13153801 - (CR-4/4E/4D)

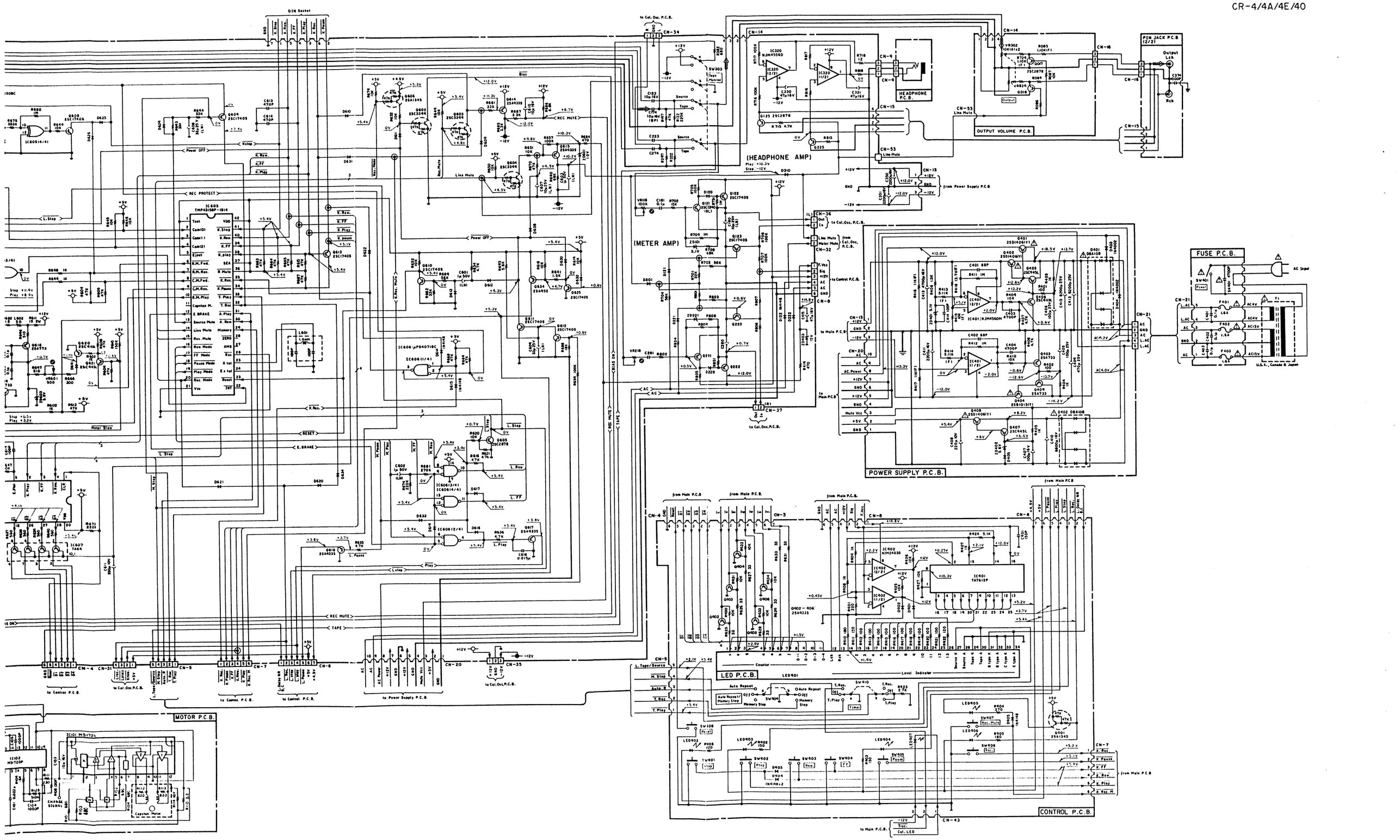


Fig. 9.2.1,2 Serial No.: A13102451 - (CR-4A)
A13153801 - (CR-4/4E/40)

(2) For Serial Nos.: A13101001 - 02450 (CR-4A)/A13150001 - 53800 (CR-4/4E/40)

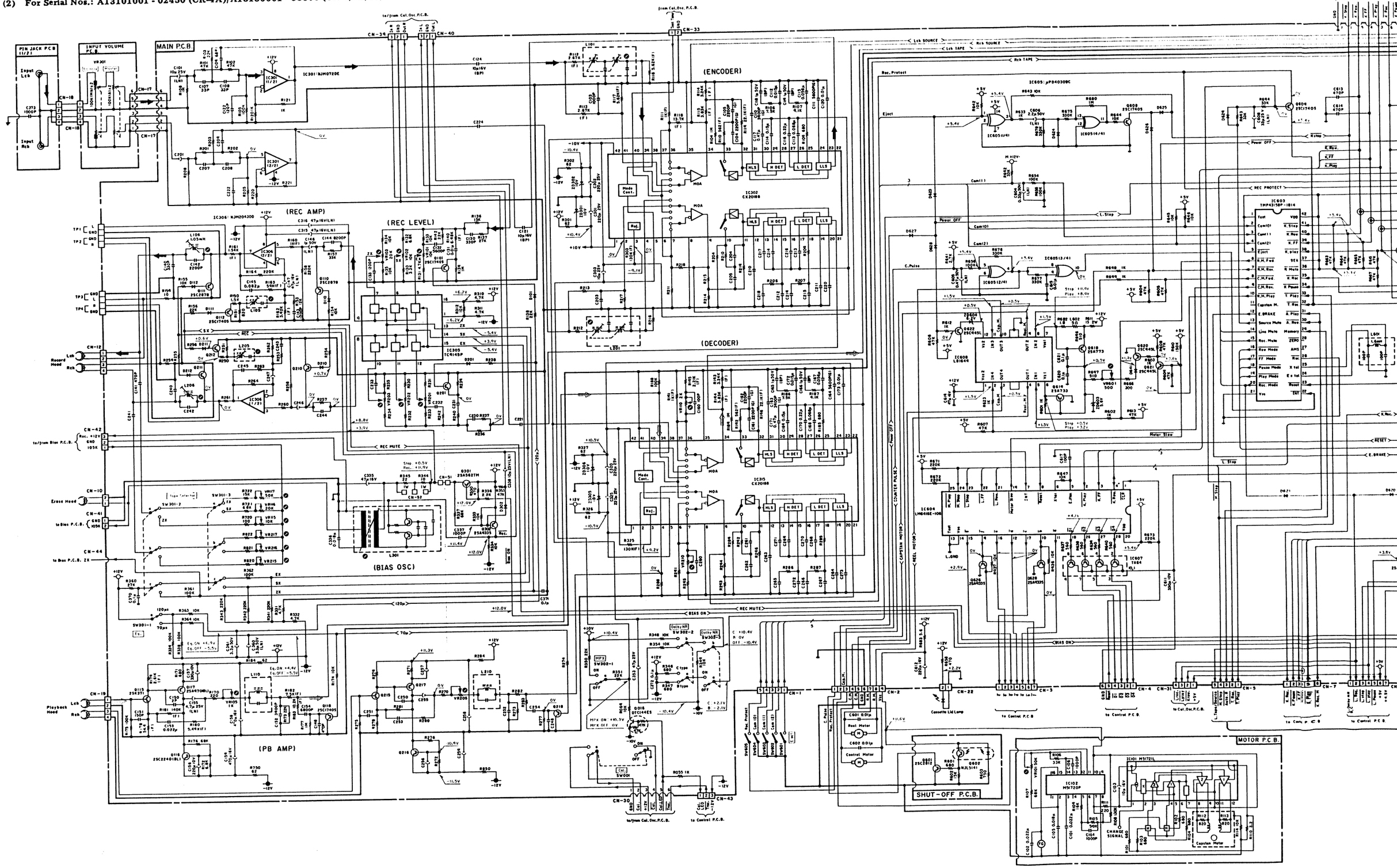


Fig. 9.2.2.1 Serial Nos.: A13101001 - 02450 (CR-4A)
A13150001 - 53800 (CR-4/4E/40)

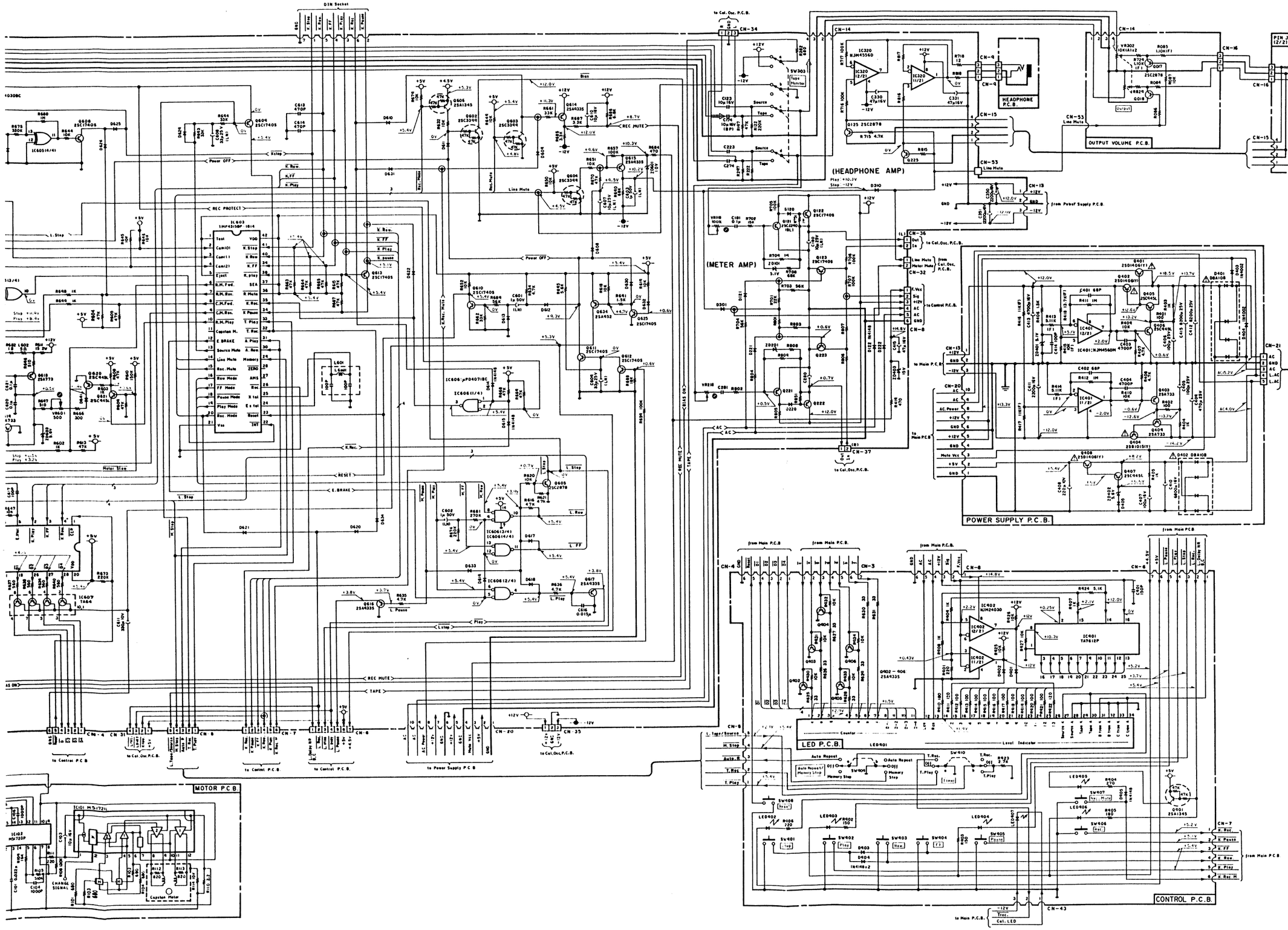
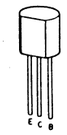
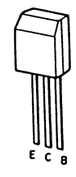


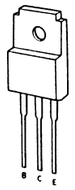
Fig. 9.2_2.1 Serial Nos.: A13101001 - 02450 (CR-4A)
A13150001 - 53800 (CR-4/4E/40)



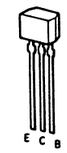
2SA562TM
2SA733
2SA933
2SA952
2SA970
2SA1345
2SC945
2SC1740
2SC2002
2SC2240
2SC2878
2SC3399



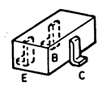
2SB564



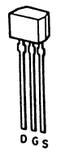
2SB1015
2SD1406



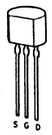
DTA114ES
DTA144ES
DTC144ES



2SC2812



2SK371



2SK246

Notes:

1. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
2. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.
3. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.
4. Voltage measuring condition:
   - Stop mode (with no input signal) unless otherwise specified.
   - Tape: SX position, Eq.: 70 μs
   - Monitor Switch: Tape
   - Timer Switch: OFF
   - Memory Stop/Auto Repeat Switch: OFF
   - MPX Switch: OFF
   - Dolby NR Switch: OFF
   - Cal. Switch: OFF
   - Play mode: Cassette with no tape played back.
5. ➡: Indicates record signal flow.
   ⇨: Indicates playback signal flow.

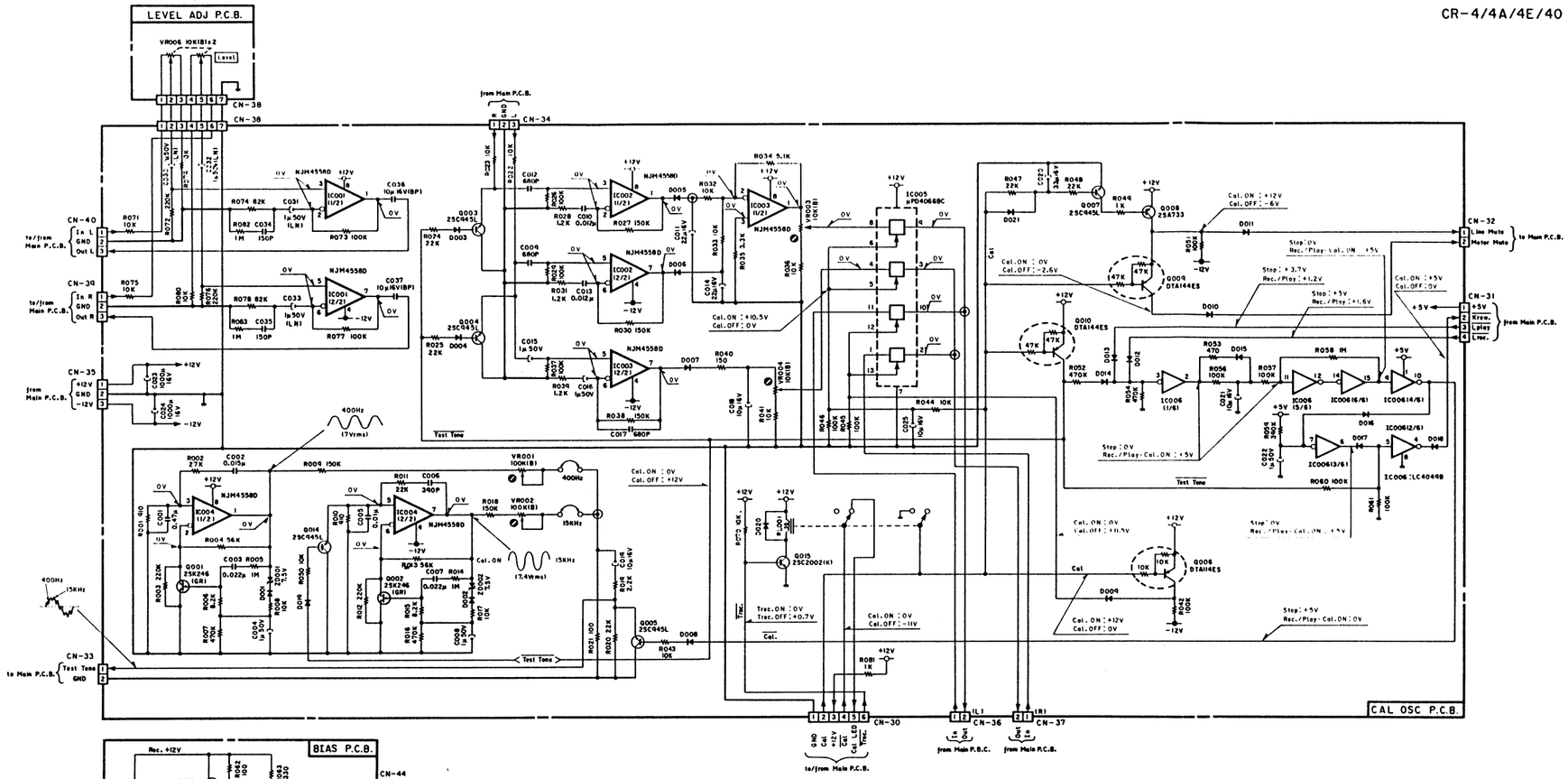


Fig. 9.2.2.2 Serial Nos.: A13101001 - 02450 (CR-4A)
A13150001 - 53800 (CR-4/4E/40)

WARNING:

Parts marked with the symbol ⚠ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

CAUTION:

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.
WARNING — DO NOT return the unit to the customer until the problem is located and corrected.

10. WIRING DIAGRAM

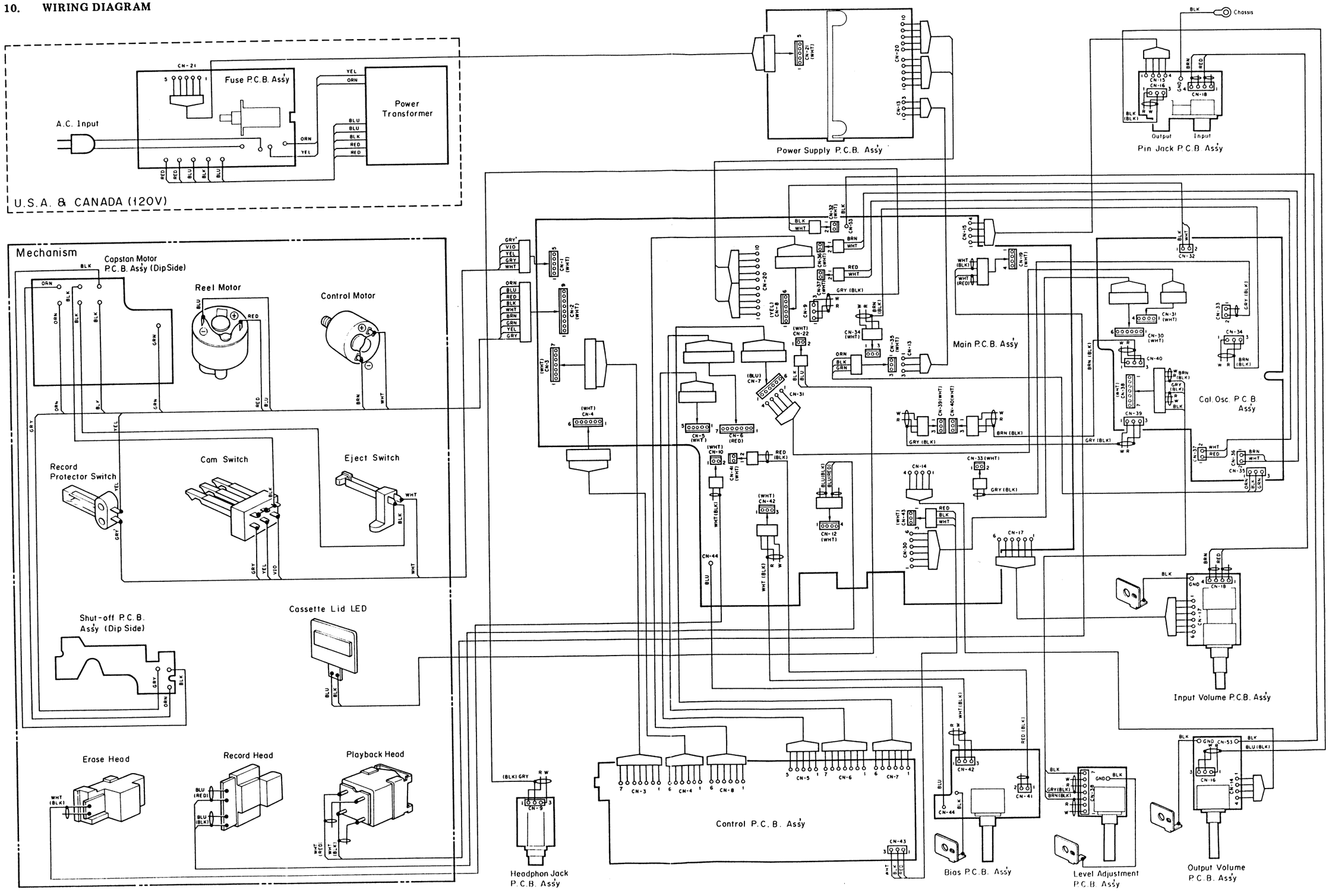
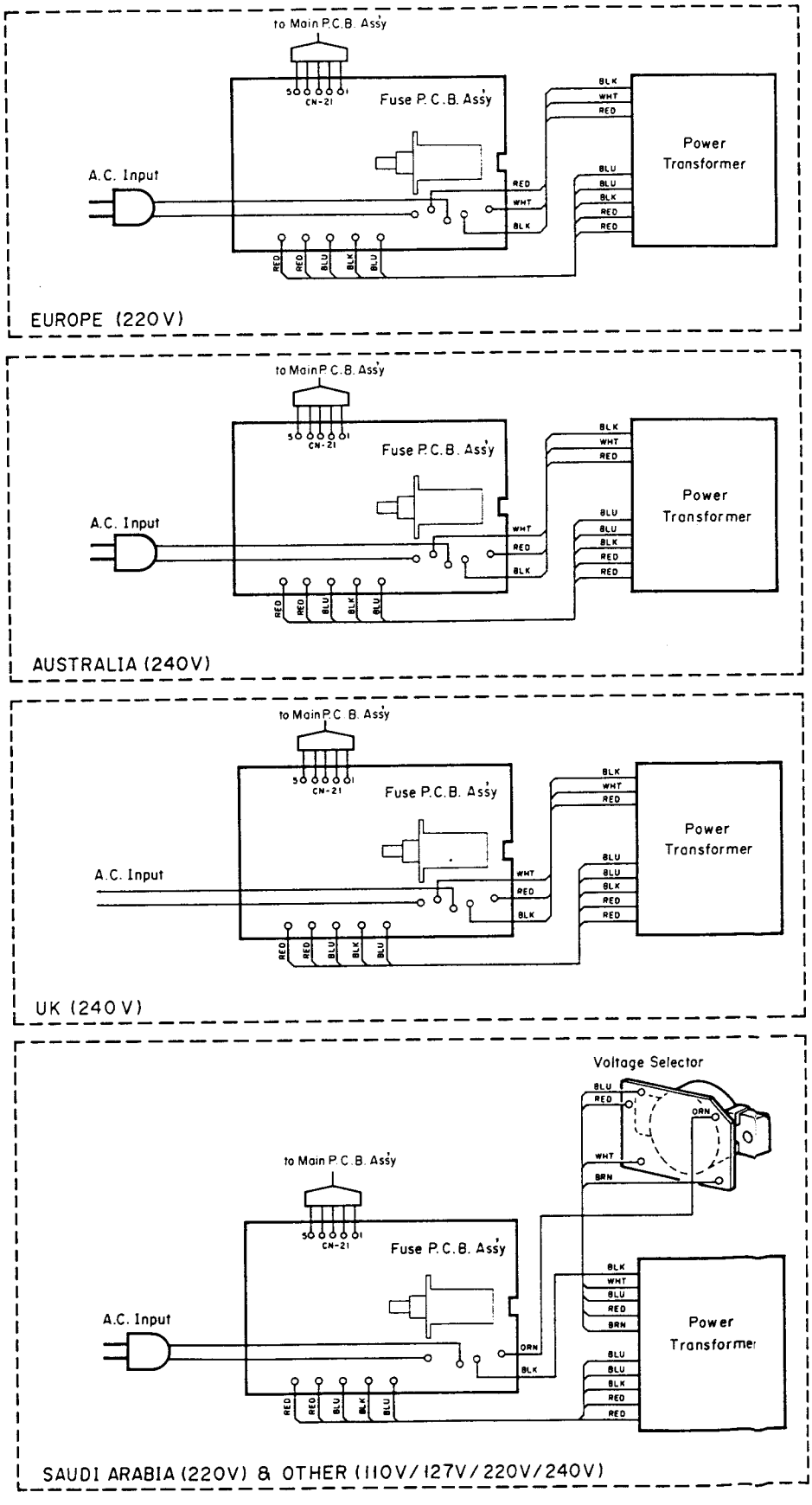


Fig. 10.1



Notes: 1. Table of wire colors
- BRN — Brown
- RED — Red
- ORN — Orange
- YEL — Yellow
- GRN — Green
- BLU — Blue
- VIO — Violet
- GRY — Gray
- WHT — White
- BLK — Black

2. Component side view of the P.C.B. is illustrated unless otherwise specified.
3. Wire tube color is shown in ( ).

Fig. 10.2

11. BLOCK DIAGRAMS

11.1. Amplifier Section

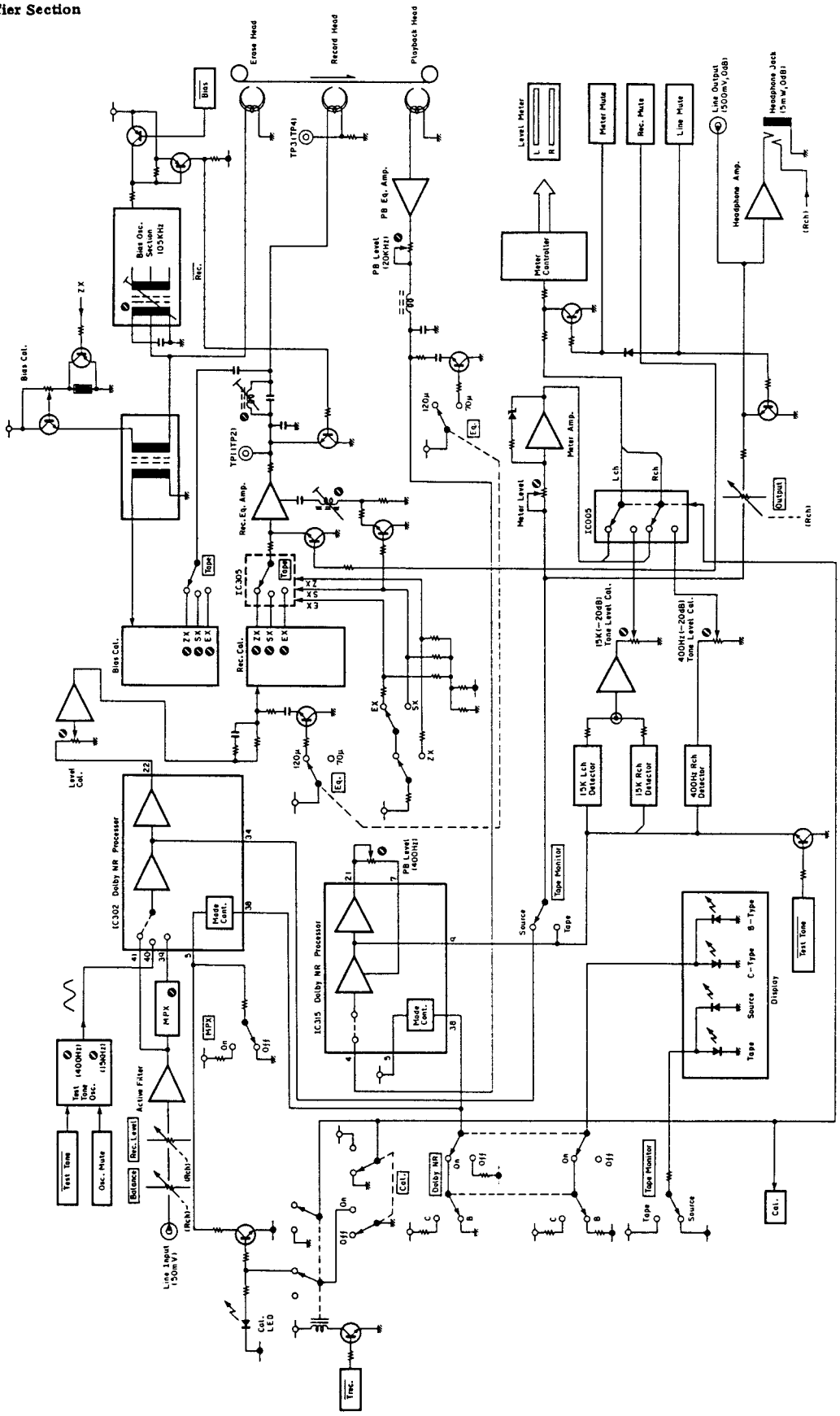


Fig. 11.1

11.2. Mechanism Control Section

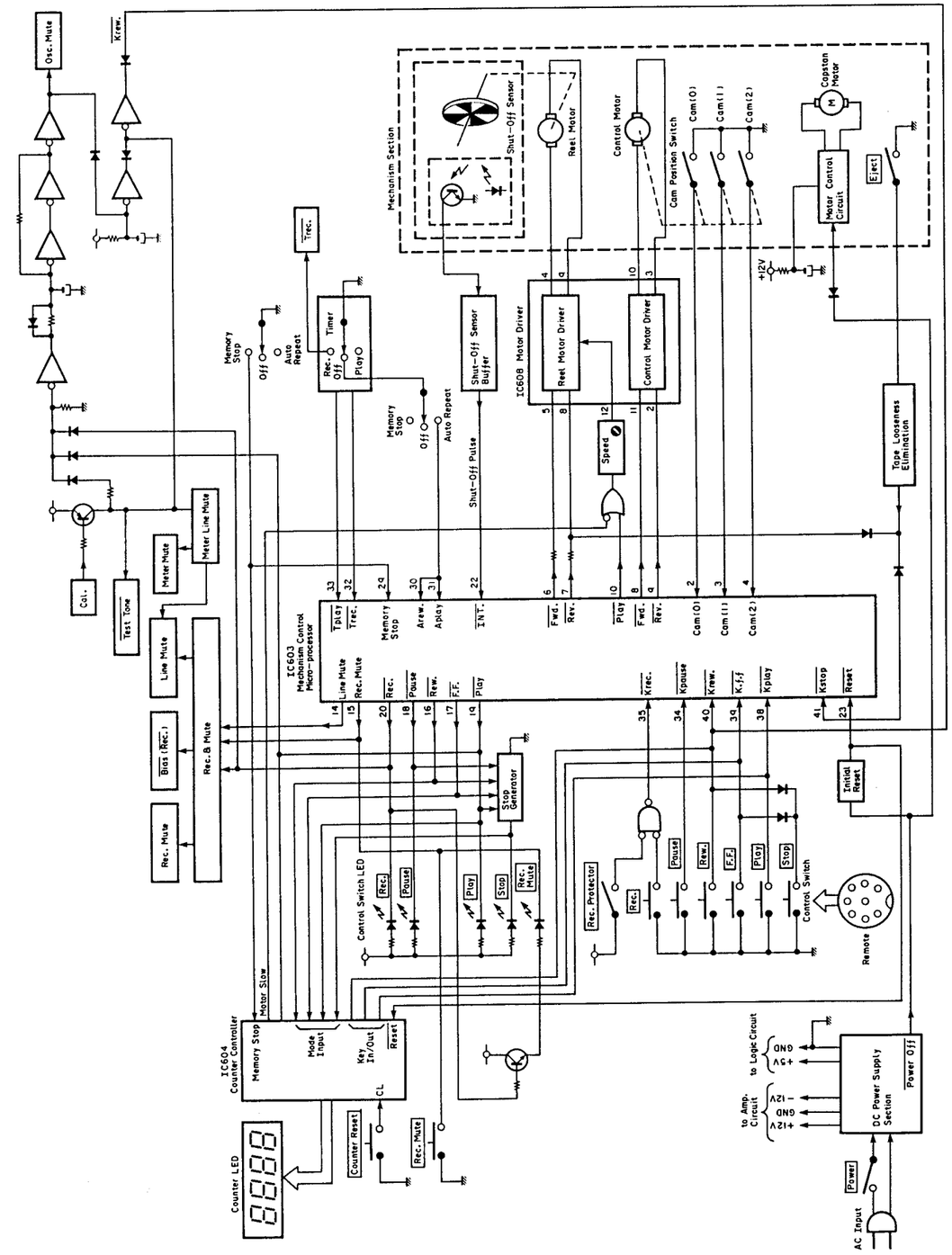


Fig. 11.2

12. TIMING CHARTS AND EQ. AMP. FREQUENCY RESPONSE

12.1. Timing Charts

(1) Overall Timing Charts

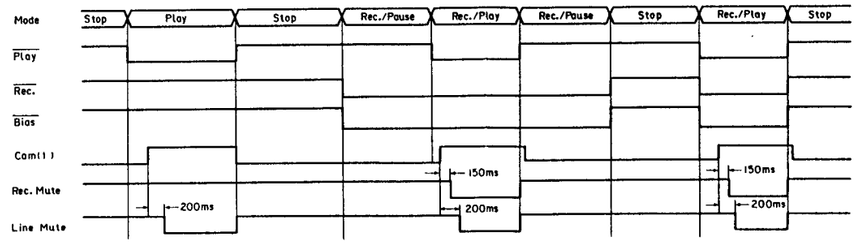


Fig. 12.1.1

(2) Mechanism Control Timing Charts

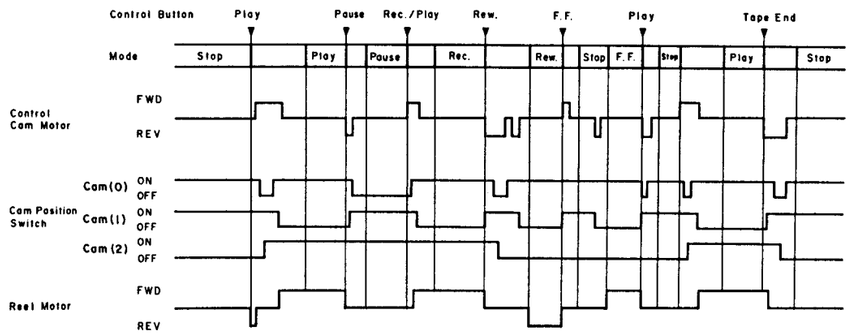


Fig. 12.1.2

12.2. Eq. Amp. Frequency Response

(1) For Serial No.: A13102451 - (CR-4A)/A13153801 - (CR-4/4E/40)

(a) Playback Frequency Response

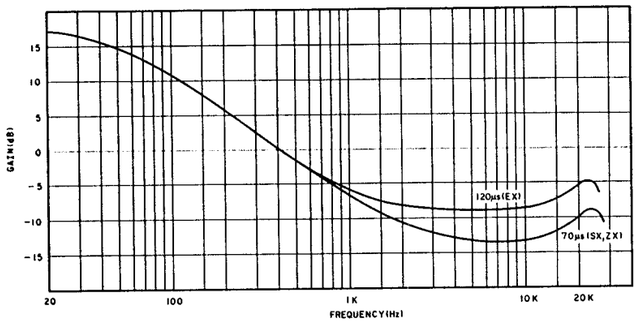


Fig. 12.2.1.1 Serial No.: A13102451 - (CR-4A)
A13153801 - (CR-4/4E/40)

(b) Record Current Frequency Response

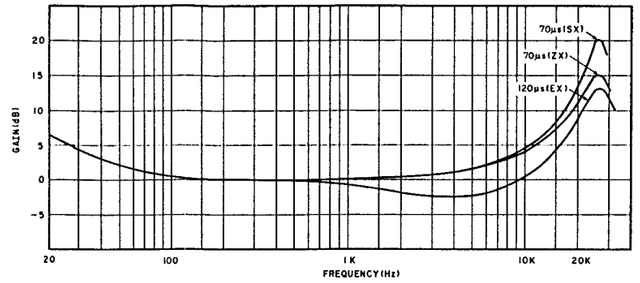


Fig. 12.2.1.2 Serial No.: A13102451 - (CR-4A)
A13153801 - (CR-4/4E/40)

(2) For Serial Nos.: A13101001 - 02450 (CR-4A)/A13150001 - 53800 (CR-4/4E/40)

(a) Playback Frequency Response

Fig. 12.2.2.1 Serial Nos.: A13101001 - 02450 (CR-4A)
A13150001 - 53800 (CR-4/4E/40)

(b) Record Current Frequency Response

Fig. 12.2.2.2 Serial Nos.: A13101001 - 02450 (CR-4A)
A13150001 - 53800 (CR-4/4E/40)

13. SPECIFICATIONS

Track Configuration	4 tracks/2-channel stereo
Heads	3 (erase head x 1, record head x 1, playback head x 1)
Motors	<Tape Transport> FG servo brushless, slotless, coreless DD motor (capstan drive) x 1 DC motor (reel drive) x 1 <Mechanism> DC motor (cam drive) x 1
Power Source	120, 220, 240 or 110/127/220/240 V AC, 50/60 Hz (According to country of sale)
Power Consumption	38 W max.
Tape Speed	1-7/8 ips (4.8 cm/sec.) ±0.5%
Wow and Flutter	Less than ±0.048% WTD Peak Less than 0.027% WTD RMS
Frequency Response	20 Hz—21,000 Hz ±3 dB (recording level —20 dB, ZX [Type IV], SX [Type II], EXII [Type I] tape)
Signal to Noise Ratio	Dolby C-Type NR on <70 μs, ZX [Type IV] tape> Better than 72 dB (400 Hz, 3% THD, IHF A-WTD RMS) Dolby B-Type NR on <70 μs, ZX [Type IV] tape> Better than 66 dB (400 Hz, 3% THD, IHF A-WTD RMS)
Total Harmonic Distortion	Less than 0.8% (400 Hz, 0 dB, ZX [Type IV] tape) Less than 1.0% (400 Hz, 0 dB, SX [Type II], EXII [Type I] tape)
Erasure	Better than 60 dB (100 Hz, +10 dB)
Separation	Better than 37 dB (1 kHz, 0 dB)
Crosstalk	Better than 60 dB (1 kHz, 0 dB)
Bias Frequency	105 kHz
Input (Line)	50 mV/30k ohms
Output (Line)	0.5 V (400 Hz, 0 dB, output level control at max.) 2.2k ohms
(Headphones)	5 mW into 8 ohms (400 Hz, 0 dB, output level control at max.)
Fast-Wind Time	Approx. 80 seconds (with C-60 cassette)
Dimensions	430 (W) x 100 (H) x 265 (D) mm 16-15/16 (W) x 3-15/16 (H) x 10-7/16 (D) inches
Approximate Weight	5.9 kg, 13 lbs.

- Specifications and design are subject to change for further improvement without notice.
- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
- The word "DOLBY" and the Double-D-Symbol are trademarks of Dolby Laboratories Licensing Corporation.

Service Manual

Nakamichi
CR-4, CR-4A, CR-4E, CR-40

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